MINNESOTA
MOTOR VEHICLE CRASH FACTS
1984

AN ANALYSIS OF CRASHES OCCURRING ON MINNESOTA ROADWAYS BASED UPON ACCIDENT REPORTS SUBMITTED BY INVESTIGATING POLICE OFFICERS AND DRIVERS TO THE MINNESOTA DEPARTMENT OF PUBLIC SAFETY

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INTRODUCTION AND SUMMARY

The 1984 edition of Minnesota Motor Vehicle Crash Facts has been produced by the Office of Traffic Safety, Minnesota Department of Public Safety, in accordance with Minnesota Statutes, Section 169.10. The information presented is derived from accident reports submitted by citizens and law enforcement agencies for motor vehicle crashes involving death, personal injury, or property damage of $500 or more. The minimum dollar amount for accidents involving only property damage has changed over the years. The first minimum was set at $50 in 1939. This remained in effect until 1965 when $100 became the minimum. In 1976, it was raised to $300 and the present minimum ($500) became effective in 1981.

In 1984, 584 people were killed and 42,654 were injured in 101,554 crashes throughout the state. Over 3.7 million vehicles traveled 32.2 billion miles on our state's roadways. During 1984, 2,910,805 people held Minnesota driver licenses.

The total economic loss resulting from motor vehicle accidents in Minnesota was nearly $450,000,0000. This figure is calculated from costs estimated for 1983 by the National Safety Council for fatalities, injuries, and property loss resulting from traffic crashes.

The total dollar value is determined as follows:

584	Deaths	@	$210,000	= $122,640,000
6,573	Severe Injuries	@	18,200	= 119,628,600
17,271	Moderate Injuries	@	5,500	= 94,990,500
18,810	Possible Injuries	@	1,300	= 24,453,000
71,442	Property Damage Accidents	@	1,150	= 82,158,300
			Total	= 443,870,400

These estimates are based on the calculable costs of wage loss, medical expenses, insurance costs, and property damage.

Despite this huge cost, Minnesota had some notable successes in the area of traffic safety:

* The fatality rate per 100,000 vehicle miles traveled was 1.81. This is significantly better than the nationwide rate of 2.70, and is an astounding improvement over Minnesota's highest rate of 13.6 (1934).

* Although fatalities increased slightly in 1984, the toll of 584 is almost 45 percent lower than the all-time high of 1,060 (1968).

* Only 55 pedestrians were killed in 1984; this is 65 percent fewer deaths than occurred in 1971 (157).

* Motor vehicle/train collisions accounted for only 11 deaths this year; this is a mere 18 percent of the highest figure of 62 fatalities (1932).

* Fewer motorcyclists were killed in 1984 than in any year since the repeal of the helmet law. This year's figure of 62 is slightly more than half the number killed in 1980, when 121 motorcyclists died.

The purpose of Minnesota Motor Vehicle Crash Facts is to provide summary information about the traffic crashes which occur in Minnesota. The report is divided into ten parts. The first examines general information about crashes, vehicles, and drivers; the other sections review pedestrians, motorcycles, and other selected types of motor vehicle crashes.

Due to changes in the way accident information was collected and analyzed this year, some of the results presented here may differ slightly from figures that will be available at a later date.

PART I

GENERAL INFORMATION

Traffic fatalities, the most commonly used measure of Minnesota's success or failure in the area of traffic safety, increased in 1984 after declining for the past five years. In 1984, the number of fatalities was 584, which was 400 fewer than the recent high of 980 in 1978. During 1984, total crashes involving vehicles increased four percent over the 1983 level to 101,554. Injuries resulting from motor vehicle crashes increased about 4 percent over the 1983 level to 42,654. To put these numbers in perspective, other factors must be considered; the number of registered vehicles increased four percent, the number of licensed drivers was fairly constant showing an increase of one half of one percent, and the number of vehicular miles traveled showed an increase of nearly six percent. When 1984 is compared to the average of the five previous years, improvements can be seen in all three categories--injuries, fatalities and number of crashes.

Nationwide, a common index of a state's progress in the area of traffic safety is the fatality rate per hundred million vehicle miles traveled. In 1984, Minnesota's fatality rate of 1.81 was our lowest ever; this means that fewer than 2 people were killed in traffic crashes for every 100,000,000 miles traveled in the state. According to preliminary data, this is one of the lowest rates in the nation. The preliminary national fatality rate for 1984 is 2.70.

It is impossible to isolate single factors which are responsible for the changes in Minnesota's traffic accident figures. It is possible to describe the specific areas in which changes or the lack of changes are notable in order to increase our understanding.

Time of Crashes

Winter in 1984 showed the usual increase in accidents; the winter months of December and January accounted for 21 percent of all crashes. The summer months (June, July, and August) had the greatest percentage of fatal crashes with 34 percent of the total. Weekends and nights are particularly dangerous times for crashes. Fatal crashes occurring during the night hours (9:00 p.m. to 2:59 a.m.), which had decreased as a percentage of the total from 1981 (42 percent) to 1983 (31 percent), rose back to 34 percent in 1984. Weekends are still hazardous; they account for 54 percent of total crashes. The single most hazardous time-period for a crash is on a Friday from 3:00 p.m. to 5:59 p.m., and the most dangerous time-period for a fatal accident is still from midnight to 1:59 on a Saturday morning.

Because many people travel long distances during holiday periods, the number of accidents which occur during these periods continues to be of particular interest. In 1984, none of the holiday periods showed a significant difference from the average in the number of fatal crashes. New Year's Eve and Thanksgiving were somewhat worse than average in terms of total crashes and New Year's, July 4th, Labor Day, and Thanksgiving were worse than average in terms of injury crashes. July 4th is interesting because it had more than the expected number of injuries but was identical to the average in terms of total crashes. Memorial Day, Labor Day and Christmas were all much better than expected for total crashes, and Christmas and Memorial Day were better than expected for injury crashes.

People Involved in Crashes

Fifty percent of the 584 persons killed in 1984 died as a result of collisions with other motor vehicles. An additional 20 percent of the fatalities were caused by collisions with fixed objects. The type of crash most likely to result in a fatality was a collision with a railroad train; the second most dangerous type of crash was a motor vehicle collision with a pedestrian.

Seventy-one percent of the people killed in motor vehicle crashes were males, although males and females are approximately equal victims of motor vehicle injuries. Thirty-seven percent of the fatalities were between the ages of 15 and 24, and 39 percent of the injuries were sustained by people in these age groups.

Contributing Factors in Crashes

At least 50 percent of all crashes, injuries and fatalities occur in clear weather and on dry roadways. Although 60 percent of injury crashes and 56 percent of property damage crashes happen in daylight, only 42 percent of fatal accidents take place during daylight hours. The most frequently mentioned contributing factors in fatal crashes are speeding (mentioned in 22 percent of fatal crashes), physical impairment, and driver inattention. The three most frequently mentioned contributing factors producing personal injuries and property damage are driver inattention (mentioned in 26 percent of crashes) failure to yield the right of way, and speeding. Unsafe or illegal speed appears to be increasing as a problem in recent years.

Roadways in Crashes

Seventy percent of the fatal crashes in 1984 happened in rural areas where the population is under 5,000. Urban areas, where the population is 5,000 or more, had nearly 65 percent of both the injury crashes and total crashes. These percentages have changed very little over the years; rural areas did show slight increases in all types of crashes in 1984.

One type of road design, undivided two-way, two-lane roads, has been for years the type of roadway on which accidents happen most often. Nearly 72 percent of fatal crashes and 39 percent of all crashes took place on this type of road.

During 1984, Minnesotans traveled 32.2 billion miles on 131,000 miles of roadway. The interstate system carried 17 percent of this vehicle mileage on seven-tenths of one percent of the miles of roadway, resulting in very dense traffic, especially in the metropolitan areas; despite this fact, a relatively small percentage of the accidents happened on the interstate system. Trunk highways rank second in terms of traffic density and produced the most fatalities (nearly 47 percent of the total) and the largest percentage of all crashes (31 percent). County State Aid Highways had the second highest percentage of fatal crashes (32 percent) and the third highest portion of total crashes (21 percent). A disproportionate share of all crashes (29 percent) occurs on local streets.

TABLE 1.01

CRASH, FATALITY AND INJURY RATES, 1975-1984

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Traffic Crashes	123,206	116,390	119,754	118,833	120,633	103,612	97,879	89,443	97,371	101,554
Traffic Fatalities	777	809	856	980	881	863	763	581	558	584
Traffic Injuries	41,931	41,580	45,200	50,332	49,604	45,227	43,739	38,692	41,086	42,654
Registered Motor Vehicles (Millions of Vehicles)	2.69	2.92	2.77	2.90	3.00	3.01	3.09	3.01	3.63	3.78
Licensed Drivers (Millions of Drivers)	2.51	2.57	2.63	2.64	2.67	2.71	2.77	2.81	2.89	2.91
Vehicular Miles Traveled (Billions of Miles)	25.6	27.0	28.1	28.8	29.0	28.5	28.6	29.4	30.5	32.2
Fatality Rate Per Hundred Million Vehicle Miles Traveled	3.03	3.00	3.05	3.40	3.04	3.03	2.67	1.98	1.83	1.81
Fatality Rate Per 100,000 Registered Vehicles	28.9	27.7	30.9	33.8	29.3	28.7	24.7	19.3	15.4	15.4
Fatality Rate Per 100,000 Population	19.8	20.4	21.6	24.5	21.7	21.2	18.6	14.2	13.5	14.1
Crash Rate Per Hundred Million Vehicle Miles Traveled	481	432	426	412	417	364	342	313	319	342
Crash Rate Per 100,000 Registered Vehicles	4,580	3,980	4,323	4,100	4,018	3,446	3,163	2,972	2,682	2,686
Crash Rate Per 100,000 Population	3,143	2,936	3,032	2,965	2,971	2,546	2,387	2,181	2,356	2,450

FIGURE 1.01

10 YEAR COMPARISON OF DRIVERS, VEHICLES AND FATALITY RATES

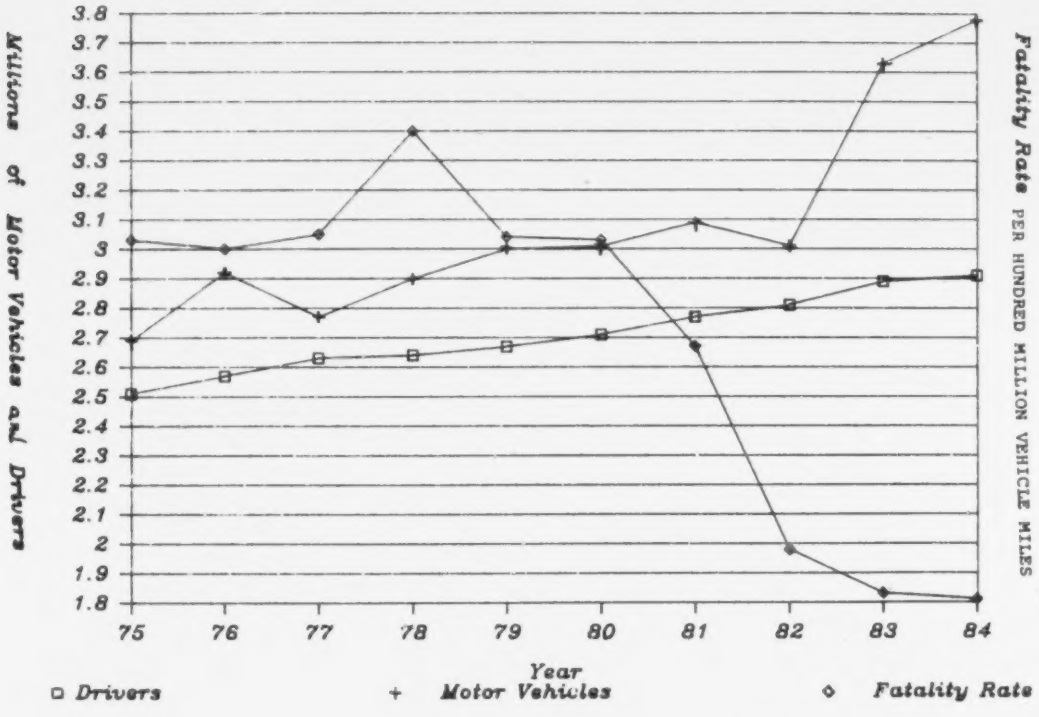

TABLE 1.02

1984 TRAFFIC TOLL COMPARED WITH 1979-1983 AVERAGE

	1979-1983 Average	1984
Deaths	729	584
Injuries	43,670	42,654
Crashes	101,788	101,554
Registered Motor Vehicles (Millions)	3.22	3.78
Licensed Drivers (Millions)	2.75	2.85
Vehicle Miles Traveled (Billions)	29.0	32.2
Fatality Rate Per 100 Million Vehicle Miles Traveled	2.51	1.81

TABLE 1.03

1984 CRASHES BY MONTH

	Fatal Crashes	Severe Injury Crashes	Moderate Injury Crashes	Possible Injury Crashes	Property Damage Crashes	Total Crashes
January	25	300	817	1,173	7,891	10,206
February	27	268	808	879	6,068	8,050
March	33	282	741	861	6,254	8,171
April	33	382	817	785	4,265	6,282
May	49	476	1,062	927	4,771	7,285
June	63	581	1,283	1,043	5,578	8,548
July	55	587	1,247	990	4,905	7,784
August	59	566	1,250	1,057	5,065	7,997
September	30	508	1,078	973	5,190	7,779
October	45	466	1,099	1,191	6,612	9,413
November	56	403	1,064	981	6,468	8,972
December	44	439	1,012	1,196	8,376	11,067
Total	519	5,258	12,278	12,056	71,443	101,554

TABLE 1.04

1984 INJURIES BY MONTH

	Fatal Injuries	Severe Injuries	Moderate Injuries	Possible Injuries	Total Injuries
January	29	369	1,123	1,721	3,242
February	31	331	1,126	1,332	2,820
March	38	359	1,027	1,260	2,684
April	41	475	1,137	1,218	2,871
May	55	604	1,438	1,482	3,579
June	77	724	1,853	1,697	4,351
July	57	742	1,750	1,607	4,156
August	65	695	1,730	1,638	4,128
September	34	631	1,497	1,602	3,764
October	47	573	1,555	1,826	4,001
November	65	519	1,547	1,558	3,689
December	45	551	1,488	1,869	3,953
Total	584	6,573	17,271	18,810	43,238

TABLE 1.05

1984 CRASHES BY TIME OF DAY AND DAY OF WEEK

Hour Beginning	Total Crashes	Fatal Crashes	Sunday		Monday		Tuesday		Wednesday		Thursday		Friday		Saturday	
			All	Fatal	All	Fatal	All	Fatal	All	Fatal	All	Fatal	All	Fatal	All	Fatal
Midnight	3322	32	689	7	366	2	280	0	303	0	388	6	419	3	877	14
1:00	3939	48	1098	16	170	2	261	2	359	6	422	4	464	2	1165	16
2:00	1834	14	593	5	76	1	124	1	134	1	180	3	170	1	557	2
3:00	1007	5	310	1	72	0	78	1	71	1	71	0	114	0	291	2
4:00	691	15	207	5	49	1	49	0	55	1	64	1	64	3	203	4
5:00	758	6	146	1	104	0	70	1	78	2	103	0	101	1	156	1
6:00	1771	12	117	2	289	3	307	1	300	3	256	0	322	0	180	3
7:00	4542	17	145	2	837	2	831	1	885	2	757	2	834	2	253	6
8:00	4129	8	185	0	728	0	736	4	699	1	626	0	801	0	354	3
9:00	3616	13	304	1	579	3	543	3	559	0	502	4	590	0	539	2
10:00	4041	8	429	0	640	1	552	1	534	2	549	2	647	2	690	0
11:00	4883	23	547	4	730	3	687	3	628	4	639	4	829	3	823	2
Noon	4834	22	589	4	730	3	646	3	607	3	612	4	834	2	816	3
1:00	4999	16	601	0	767	3	643	4	656	2	644	2	806	1	883	4
2:00	5671	15	657	2	847	3	760	2	840	2	756	0	969	2	842	4
3:00	7400	29	705	1	1218	5	1052	3	1098	2	1069	5	1381	8	877	5
4:00	7785	27	676	1	1254	6	1189	2	1106	2	1221	5	1504	5	835	6
5:00	7201	31	679	2	1106	4	1082	5	1136	3	1077	4	1322	8	799	5
6:00	5134	24	609	4	681	3	795	1	702	5	735	5	873	4	739	2
7:00	4604	32	524	5	557	4	624	3	649	3	654	1	860	6	736	10
8:00	3895	28	463	7	476	4	440	5	565	4	513	0	764	4	674	4
9:00	3951	26	485	1	454	1	498	5	509	2	508	6	825	6	672	5
10:00	3232	23	320	3	328	3	381	4	395	4	414	3	694	3	700	3
11:00	3486	32	308	5	296	4	371	1	424	3	437	2	917	12	733	5
Unknown	4829	13	593	5	634	1	597	1	640	1	633	2	918	1	818	2
Total	101,554	519	11,979	84	13,988	62	13,596	57	13,932	59	13,830	65	18,022	79	16,212	113

FIGURE 1.02

NUMBER OF CRASHES BY TIME OF DAY

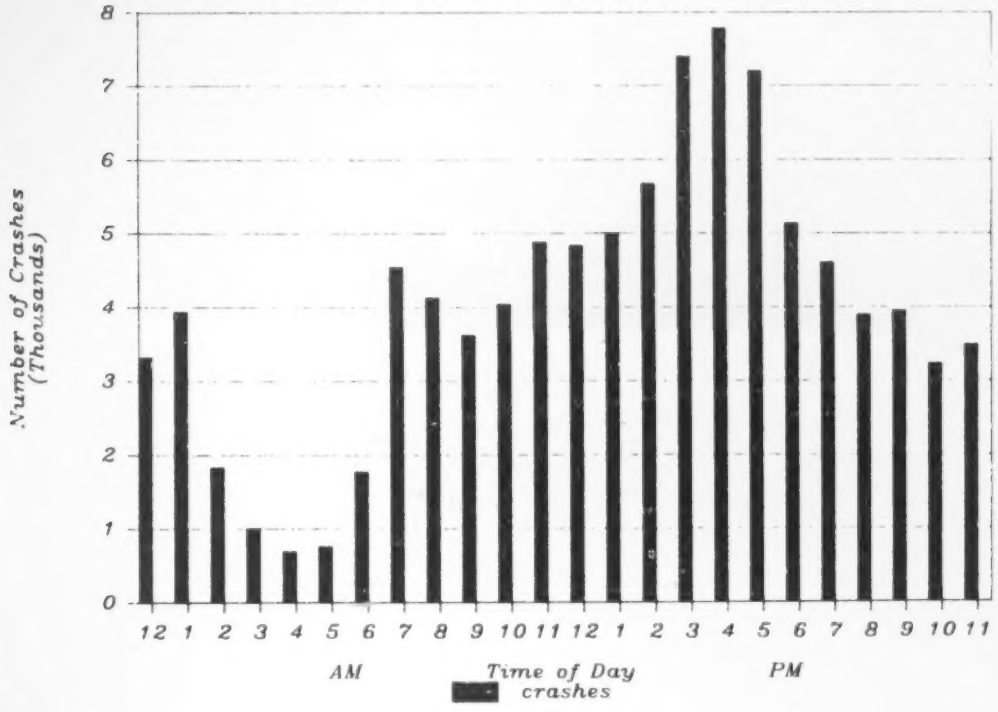

FIGURE 1.03

FATAL CRASHES BY TIME OF DAY

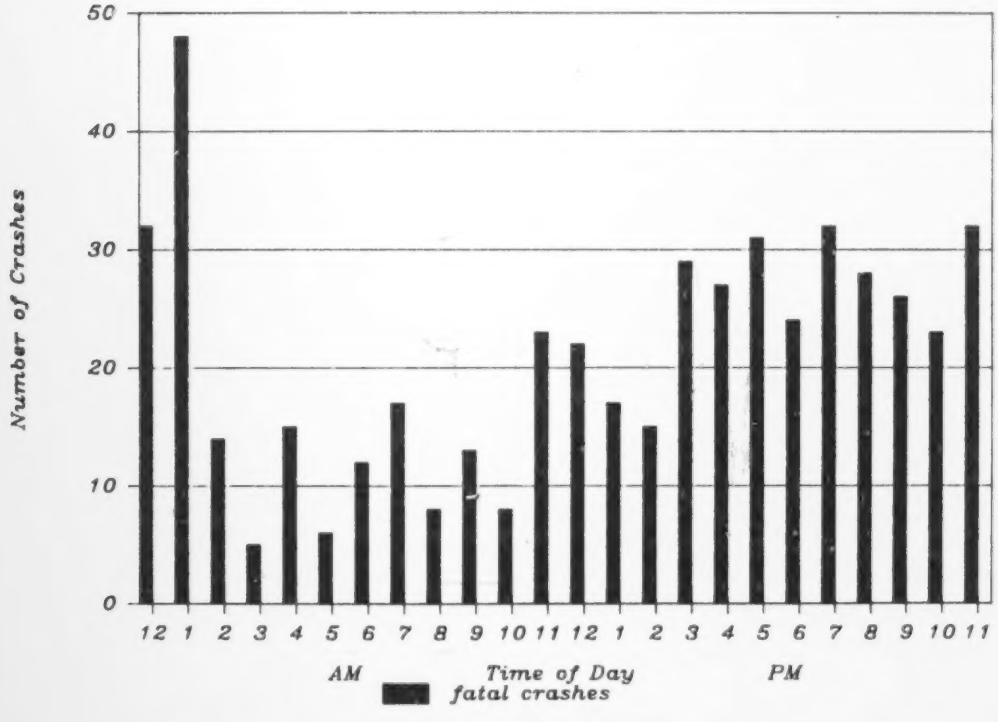

TABLE 1.06

HOLIDAY CRASH SUMMARY, 1977-1984

	Year	Hours	Total Crashes	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes
New Year's	1977	78	1,568	6	312	1,250
	1978	78	1,196	5	292	899
	1979	30	609	4	175	417
	1980	30	698	6	218	474
	1981	78	1,360	4	298	1,058
	1982	54	640	0	159	414
	1983	54	577	1	160	416
	1984	78	931	1	194	736
	1985	30	446	1	112	333
Memorial Day	1977	78	854	8	258	588
	1978	78	1,030	13	343	674
	1979	78	775	8	307	440
	1980	78	693	8	316	369
	1981	78	876	9	298	569
	1982	78	548	6	215	327
	1983	78	826	9	304	513
	1984	78	696	7	246	443
July 4th	1977	78	941	18	274	649
	1978	30	348	7	154	187
	1979	30	346	2	148	196
	1980	78	827	16	339	472
	1981	78	788	13	328	447
	1982	78	606	12	242	355
	1983	78	750	5	293	452
	1984	30	328	2	140	186
Labor Day	1977	78	765	7	293	465
	1978	78	906	9	335	562
	1979	78	857	10	296	551
	1980	78	899	11	310	578
	1981	78	736	7	273	456
	1982	78	667	7	237	423
	1983	78	793	5	299	489
	1984	78	748	5	274	496
Thanksgiving	1977	102	2,017	7	370	1,640
	1978	102	1,746	7	407	1,332
	1979	102	1,423	9	397	1,017
	1980	102	2,121	8	486	1,627
	1981	102	961	7	260	694
	1982	102	1,035	10	289	736
	1983	102	1,350	5	290	1,055
	1984	102	1,491	9	440	1,042
Christmas	1977	78	882	3	212	667
	1978	78	982	6	225	751
	1979	30	204	2	46	161
	1980	30	206	5	46	155
	1981	78	893	7	211	675
	1982	54	471	1	112	358
	1983	78	1,435	3	313	1,119
	1984	30	174	1	52	222

TABLE 1.07

1984 HOLIDAY CRASHES COMPARED WITH THE AVERAGE

Holiday	Hours	Total Crashes		Fatal Crashes		Personal Injury Crashes	
		Holiday	Average	Holiday	Average	Holiday	Average
New Year's 6:00 PM Monday, Dec. 31, 1984 to Midnight Tuesday, Jan. 1, 1985	30	446	315	1	1	112	91
Memorial Day 6:00 PM Friday, May 25 to Midnight Monday, May 28	78	696	906	7	6	246	268
July 4 6:00 PM Tuesday, July 3 to Midnight Wednesday, July 4	30	328	328	2	1	140	96
Labor Day 6:00 PM Friday, August 31 to Midnight Monday, September 3	78	748	906	5	6	274	268
Thanksgiving 6:00 PM Wednesday, November 28 to Midnight Sunday, December 1	102	1,491	1,217	9	7	440	361
Christmas 6:00 PM Monday, December 24 to Midnight Tuesday, December 25	30	174	315	1	1	52	91

The average consists of the average number of accidents occurring in 1984 during periods of equal length on the same days of the week.

TABLE 1.08

1984 FATALITIES AND INJURIES BY TYPE OF CRASH*

Type of Crash	Fatal Crashes	Number Killed	Fatality Rate Per 1,000 Crashes	Injury Crashes	Number Injured	Property Damage Crashes	Total Crashes
Collision With Other Motor Vehicle	241	291	4.7	17,791	27,904	43,769	61,801
Collision With Parked Motor Vehicle	6	6	4.5	1,002	1,245	12,421	13,429
Collision With Railroad Train	7	11	73.8	56	73	86	149
Collision With Bicyclist	15	15	11.8	1,240	1,290	17	1,272
Collision With Pedestrian	51	51	31.7	1,560	1,661	0	1,611
Collision With Animal	1	1	.3	258	314	3,364	3,623
Collision With Fixed Object	110	119	9.3	4,268	5,555	8,388	12,766
Collision with Other Object	1	1	2.1	148	186	321	470
Overturn	80	82	15.9	2,779	3,848	2,291	5,150
Fire/Explosion	0	0	0	4	4	109	113
Submersion	1	1	16.9	17	23	41	59
Other	6	6	5.4	469	551	636	1,111
Total	519	584	5.7	29,592	42,654	71,443	101,554

* The type of crash is determined by the first harmful event to take place in the accident.

For Type of Accident broken down by Driver Age, see Table 7.04.

TABLE 1.09

AGE AND TYPE OF FATALITY IN 1984

Fatality Type	0-9	10-19	20-29	30-39	40-49	50-59	60 & Older	Total
Car/Truck Driver		56	95	51	29	21	58	310
Car/Truck Passenger	19	35	23	9	6	6	21	119
Pedestrian	7	9	8	5	2	5	19	55
Bicyclist	3	8	1	1		1	1	15
Motorcycle Driver/Passenger		10	37	10	5			62
Three-Wheel Driver/Passenger		2	1		1			4
Snowmobile Driver/Passenger		3	4		2			9
Farm Equipment Driver/Passenger		1	2		1	1	1	6
Other	1		2				1	4
Total	30	124	173	76	46	34	101	584

FIGURE 1.04

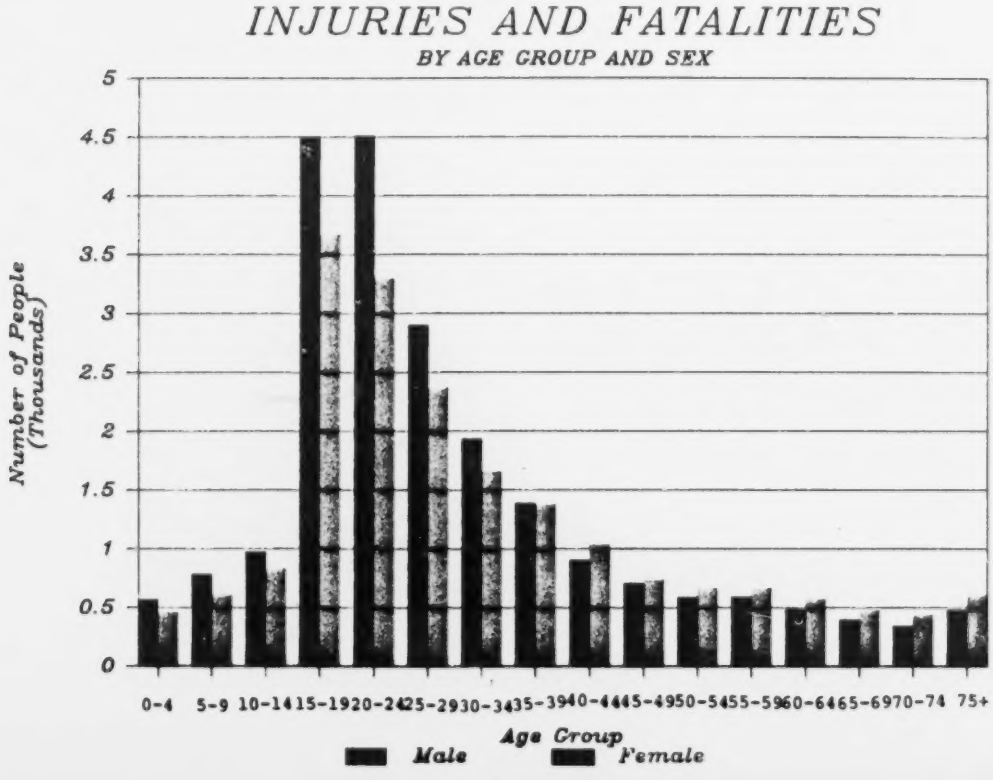

TABLE 1.10

AGE AND SEX OF PERSONS KILLED AND INJURED IN 1984 CRASHES

Age Group	Killed			Injured		
	Male	Female	Total	Male	Female	Total
0- 4	7	6	13	561	450	1011
5- 9	9	8	17	760	603	1363
10-14	14	3	17	958	824	1782
15-19	74	33	107	4,423	3,635	8,058
20-24	89	20	109	4,417	3,283	7,700
25-29	45	19	64	2,852	2,344	5,196
30-34	37	8	45	1,897	1,643	3,540
35-39	25	6	31	1,364	1,367	2,731
40-44	15	5	20	890	1,025	1,915
45-49	20	6	26	684	728	1,412
50-54	13	5	18	574	659	1,233
55-59	8	8	16	581	651	1,232
60-64	16	3	19	468	578	1,046
65-69	10	3	13	385	471	856
70-74	10	11	21	332	431	763
75 & Over	25	23	48	450	578	1,028
Not Stated	0	0	0	742	1,046	1,788
Total	417	167	584	22,338	20,316	42,654

TABLE 1.11

1984 CRASHES BY LIGHT CONDITION

Light Condition	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	All Crashes
Daylight	217	17,738	39,753	57,708
Dawn/Dusk	33	1,835	4,773	6,641
Dark/Street Lights On	66	5,560	14,100	19,726
Dark/No Street Lights	192	3,864	7,331	11,387
Other/ Unknown	11	595	5,486	6,092
Total	519	29,592	71,443	101,554

TABLE 1.12

1984 CRASHES BY WEATHER CONDITION

Weather Condition	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	All Crashes
Clear	281	15,752	34,283	50,316
Cloudy	159	8,367	18,846	27,372
Rain	27	2,492	5,726	8,245
Snow/Sleet	32	1,863	6,111	8,006
Fog	12	351	791	1,154
Other	2	165	565	732
Not Stated/Unknown	6	602	5,121	5,729
Total	519	29,592	71,443	101,554

TABLE 1 13

1984 CRASHES BY ROAD SURFACE CONDITION

Road Surface Condition	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	All Crashes
Dry	373	18,866	38,220	57,459
Wet	63	5,145	11,300	16,508
Snow/Slush	10	1,172	4,083	5,265
Ice/Packed Snow	61	3,381	12,466	15,908
Other	6	429	772	1,207
Not Stated/Unknown	6	599	4,602	5,207
Total	519	29,592	71,443	101,554

TABLE 1.14

1984 CRASHES BY ROAD DESIGN

Light Condition	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	All Crashes
Freeway	30	2,047	4,918	6,995
Other Divided Highway	67	3,503	5,478	9,048
One-Way Street	4	787	1,283	2,074
4-6 Lanes Undivided - Two-Way	36	5,380	8,782	14,198
3 Lanes Undivided	3	168	312	483
2 Lanes Undivided - Two-Way	372	13,655	25,413	39,440
Alley/Driveway	1	337	1,391	1,729
Other	3	728	4,077	4,808
Not Stated/Unknown	3	2,987	19,789	22,779
Total	519	29,592	71,443	101,554

TABLE 1.15

1984 CRASHES BY TYPE OF ROADWAY

Type Of Roadway	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	All Crashes
Interstate	22	1,686	4,873	6,581
Trunk Highway	241	10,361	21,013	31,615
County State Aid Highway	170	7,690	13,693	21,553
County Road	20	776	1,176	1,972
Township Road	24	719	1,028	1,771
Local Street	41	7,492	21,934	29,467
Other Road	1	868	7,726	8,595
Total	519	29,592	71,443	101,554

TABLE 1.16

1984 MILEAGE AND CRASH DISTRIBUTION BY TYPE OF ROADWAY

Type of Roadway	Percent of Road Mileage	Percent of Vehicle Mileage	Percent of All Crashes	Percent of Fatal Crashes
Interstates	.7	17.5	6.5	4.6
Trunk Highways	8.5	40.5	31.1	46.6
County State Aid Highways	22.8	21.3	21.2	32.5
County Roads	11.6	2.4	1.9	3.8
Township Roads	42.2	2.4	1.7	4.6
Local Streets	11.8	15.7	29.0	7.9
Other Roads	2.3	.1	8.5	.2

TABLE 1.17

LOCATION OF 1984 CRASHES BY POPULATION

Population of City or Township	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	All Crashes
100,000 & Over	44	6,683	16,881	23,608
50,000- 99,999	17	1,619	3,673	5,309
25,000- 49,999	29	4,877	10,660	15,566
10,000- 24,999	40	4,243	9,723	14,006
5,000- 9,999	25	1,967	4,415	6,407
2,500- 4,999	12	1,054	2,330	3,396
1,000- 2,499	14	532	1,340	1,886
Under 1,000	338	8,617	22,421	31,376
Total	519	29,592	71,443	101,554

FIGURE 1.05

TOTAL CRASHES BY LOCATION

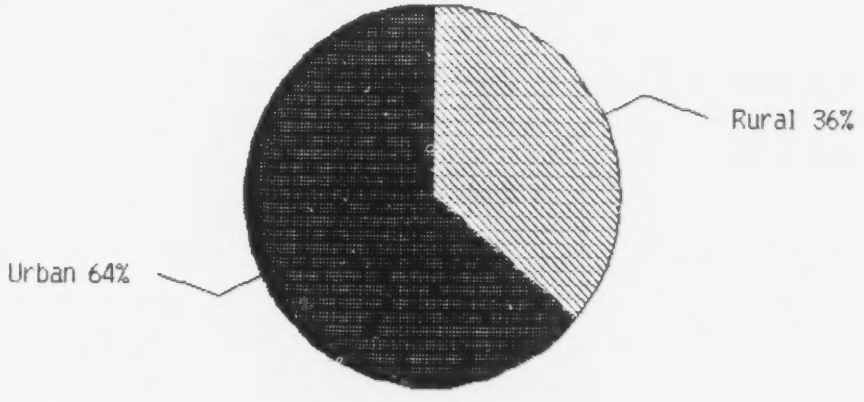

FIGURE 1.06

FATAL CRASHES BY LOCATION

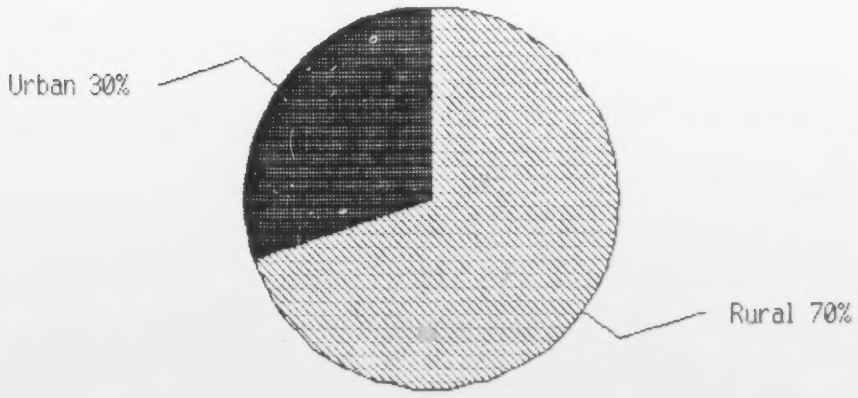

FIGURE 1.07

INJURY CRASHES BY LOCATION

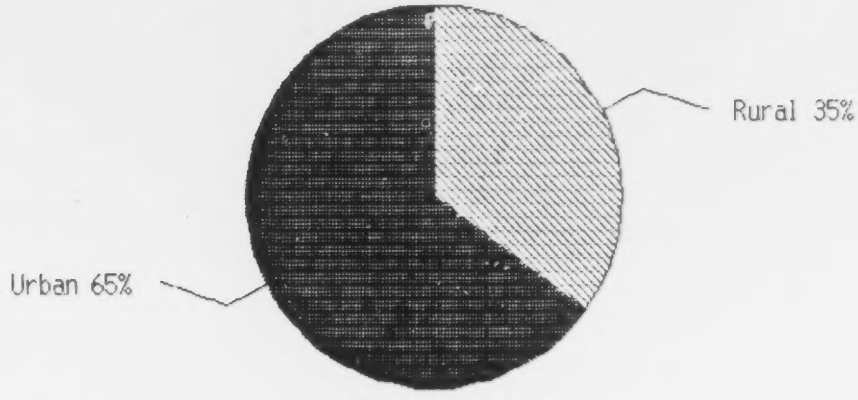

FIGURE 1.08

PROPERTY DAMAGE CRASHES BY LOCATION

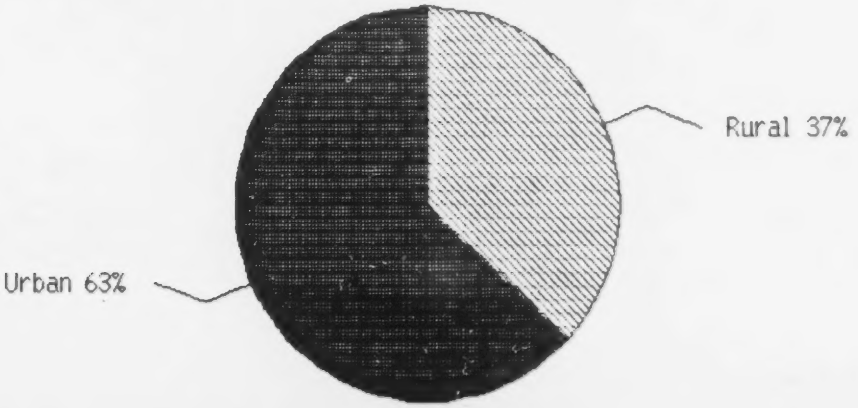

TABLE 1.18

DRIVER LICENSE* SUMMARY BY AGE, 1975-1984

Age	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984		
										Male	Female	Total
15-19	300,906	307,481	315,138	304,021	290,570	281,750	269,577	257,151	248,761	123,577	113,247	236,824
20-24	366,037	373,524	381,161	381,377	385,831	391,310	395,496	392,548	388,573	193,938	182,113	376,051
25-29	326,743	341,678	347,358	343,112	350,879	360,167	369,236	376,034	381,076	196,630	187,914	384,544
30-34	249,022	263,080	278,622	285,395	299,790	317,137	329,488	336,185	343,874	179,546	171,182	350,728
35-39	202,558	209,903	221,252	229,247	235,994	240,789	257,450	270,169	281,484	151,254	144,648	295,902
40-44	178,964	181,150	183,921	186,793	190,213	196,020	204,317	215,529	224,477	118,994	112,746	231,740
45-49	181,586	180,661	178,614	173,818	173,194	172,813	175,196	177,343	182,122	95,918	89,616	185,534
50-54	178,987	178,916	179,266	176,922	174,754	173,760	173,361	171,348	168,949	87,953	80,295	168,248
55-59	161,616	155,747	166,771	165,288	167,712	168,986	169,120	169,761	169,520	87,928	79,701	167,629
60-64	141,978	145,464	146,736	147,428	147,381	148,512	152,104	154,268	154,937	83,161	74,150	157,311
65-69	113,363	115,327	117,955	118,899	121,295	124,469	128,310	130,611	133,450	70,092	63,411	133,503
70-74	82,527	85,428	86,494	87,833	90,064	92,061	95,385	99,435	101,548	55,084	48,441	103,525
75 & Older	95,318	94,665	93,383	96,487	97,741	98,499	106,857	115,664	118,371	68,715	50,551	119,266
Total	2,579,605	2,633,024	2,696,671	2,696,620	2,725,418	2,766,273	2,825,897	2,866,046	2,897,142	1,512,790	1,398,015	2,910,805

*Includes Learner's Permits

TABLE 1.19

APPARENT CONTRIBUTING FACTORS IN 1984 CRASHES

Apparent Contributing Factors	Fatal Crashes	Severe Injury Crashes	Moderate Injury Crashes	Possible Injury Crashes	Property Damage Crashes	All Crashes
Failure to Yield Right of Way	59	1,274	2,868	2,483	10,303	16,987
Illegal/Unsafe Speed	176	1,357	2,764	2,294	10,053	16,644
Following Too Closely	3	176	711	1,279	3,442	5,611
Disregard For Traffic Control Device	38	501	919	738	2,126	4,322
Driving Left of Roadway Center--Not Passing	82	287	446	264	1,301	2,380
Improper Passing/ Overtaking	11	129	252	202	1,580	2,174
Improper/Unsafe Lane Use	36	301	646	545	4,277	5,805
Improper Parking/ Starting/Stopping	6	102	189	239	1,621	2,157
Improper Turn	8	178	370	336	2,474	3,366
Unsafe Backing	2	33	94	110	2,708	2,947
No/Improper Signal	2	20	50	72	370	514
Impeding Traffic	1	24	84	89	243	441
Driver Inattention/ Distraction	130	1,876	4,727	4,426	18,347	29,506
Driver Inexperience	24	389	898	697	3,412	5,420
Physical Impairment	132	975	1,950	1,063	3,635	7,755
Vision Obscured	17	315	678	562	2,599	4,171
Defective Equipment	8	118	265	236	1,125	1,752
Pedestrian Violation/ Error	28	340	272	267	32	939
Other	20	177	432	323	1,366	2,318
Total*	783	8,572	18,615	16,225	71,014	115,209

* Many accidents have more than one contributing factor.

For Contributing Factors broken down by Driver Age, see Table 7.05.

TABLE 1.20

VEHICLE MOVEMENT IN 1984 MULTI-VEHICLE INTERSECTION CRASHES

Vehicle Movement	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	All Crashes
Entering at Angle	61	5,566	9,127	14,754
Same Direction--Both Going Straight	1	766	1,455	2,222
Sideswipe--Passing	2	175	760	937
Same Direction--One Turning, One Straight	2	558	1,394	1,954
Same Direction--One Stopped	3	1,830	2,658	4,491
Same Direction--All Others	1	161	842	1,004
Head On	4	137	136	277
Sideswipe--Meeting	1	67	194	262
Opposite Direction--One Left Turn, One Straight	15	1,806	2,958	4,779
Opposite Direction--All Others	0	51	208	259
Backed Into	1	15	191	207
Not Stated	0	11	21	32
Total	91	11,143	19,944	31,178

TABLE 1.21

VEHICLE MOVEMENT IN 1984 MULTI-VEHICLE NON-INTERSECTION CRASHES

Vehicle Movement	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	All Crashes
Head On	94	560	295	949
Same Direction--Both Going Straight	8	1,051	2,109	3,168
Sideswipe--Passing	28	643	2,004	2,675
One Car Parked	6	961	10,102	11,069
One Car Stopped In Traffic	4	899	1,314	2,217
One Car Entering Parked Position	0	7	49	56
One Car Leaving Parked Position	0	71	599	670
One Car Entering Driveway Alley	3	522	1,073	1,598
One Car Leaving Driveway Alley	2	299	1,064	1,365
Backed Into	0	48	555	603
All Others	11	271	662	944
Not Stated	0	7	19	26
Total	156	5,339	19,845	25,340

TABLE 1.22

MOTOR VEHICLE REGISTRATIONS, 1980-1984

Type of Vehicle	1980	1981	1982	1983	1984
Passenger Cars	2,017,865	2,092,170	2,157,922	2,185,457	2,258,877
Pickup Trucks		410,349	464,801	469,116	490,087
Commercial Station Wagons	5,481	4,408	0	0	0
Farm Trucks	123,261	72,234	50,303	45,147	42,502
Gross Weight Trucks	573,472	216,965	51,926	48,269	49,384
Urban Zone Trucks	7,280	7,111	5,720	4,306	2,792
Commercial Zone Trucks		2	348	484	595
Minnesota Based Prorate Trucks	21,330	21,426	20,951	22,484	24,394
Recreational Vehicles	34,827	35,187	31,926	31,791	32,451
Motorcycles	157,815	166,151	159,345	155,502	153,851
Mopeds	12,056	13,955	14,725	14,516	13,633
School Buses	4,123	4,031	4,002	4,113	3,998
Buses	3,026	3,256	3,459	3,490	3,604
Van Pool	0	0	0	0	137
Tax Exempt Vehicles	46,169	47,694	48,732	49,811	51,525
Motor Vehicle Subtotal	3,006,705	3,094,939	3,014,160	3,034,486	3,127,830
Trailers	552,558	565,914	614,631	565,046	615,004
Collector's Items	23,092	26,579	30,569	35,048	39,981
Grand Total	3,582,355	3,687,432	3,659,360	3,634,580	3,782,815

TABLE 1.23

TYPES OF MOTOR VEHICLES IN 1984 CRASHES*

Motor Vehicle Type	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	All Crashes
Passenger Car	485	39,410	97,734	137,629
Passenger Car & Trailer	2	29	91	122
Truck Or Truck Tractor	59	2,281	6,202	8,542
Truck Tractor and Semi-Trailer	55	793	2,571	3,419
Truck Tractor and Twin Trailer	0	1	7	8
Truck With Other Trailer	2	54	146	202
Pickup	83	3,502	9,268	12,853
Van	21	1,001	2,630	3,652
Motorcycle	63	2,353	417	2,833
Motorscooter/Motorbike	0	124	15	139
Motorized Bike/Moped	1	89	8	98
All Terrain Vehicle	4	N/A	N/A	4
School Bus	3	181	502	686
Bus	1	151	383	535
Motorhome/Camper	2	86	256	344
Snowmobile	11	51	23	85
Farm Tractor or Equipment	7	88	117	212
Taxicab	1	72	187	260
Police Vehicle	1	156	296	453
Fire Department Vehicle	0	13	34	47
Ambulance	0	12	24	36
Military Vehicle	0	3	6	9
Road Maintenance Vehicle	1	49	158	208
Hit-And-Run Vehicle	9	1,135	10,601	11,745
Bicyclist	16	1,263	17	1,296
Pedestrians	55	1,722	0	1,777
Other	0	274	919	1,193
Total	882	54,893	132,612	188,387

* Most crashes involve more than one vehicle. For that reason, the total number of vehicles involved in crashes and listed here is greater than the number of crashes.

TABLE 1.24

PEOPLE KILLED AND INJURED IN VARIOUS VEHICLE TYPES

Vehicle Type	Fatalities	Severe Injuries	Moderate Injuries	Possible Injuries	Total
Passenger Car	338	3,996	12,268	14,786	31,388
Passenger Car & Trailer	0	5	6	11	22
Truck Or Truck Tractor	26	175	521	567	1,289
Truck Tractor and Semi-Trailer	7	47	128	143	325
Truck With Other Trailer	0	11	7	7	25
Pickup Truck	44	379	1,025	1,056	2,504
Van	15	99	289	326	729
Motorcycle	62	817	1,288	485	2,652
Motorscooter/Motorbike	0	60	60	19	139
Moped	1	33	51	8	93
All Terrain Vehicle	4	N/A	N/A	N/A	4
School Bus	0	7	76	80	163
Bus	0	4	29	80	113
Motorhome/Camper	1	4	16	36	57
Snowmobile	9	24	12	21	66
Farm Equipment	6	8	15	11	40
Taxicab	0	5	14	37	56
Police Vehicle	0	15	29	72	116
Fire Department Vehicle	0	0	2	5	7
Ambulance	0	2	11	8	21
Military Vehicle	0	1	2	0	3
Road Maintenance Vehicle	0	5	3	3	11
Bicyclist	15	265	657	336	1,273
Pedestrian	55	580	599	503	1,737
Other/Unknown	1	31	163	210	405
Total	584	6,573	17,271	18,810	43,238

TABLE 1.25

1984 COUNTY CRASH REPORT

County	All Crashes 1984	Average Crashes 1979-1983	Fatal Crashes 1984	Number Killed 1984	Average Killed 1979-1983	Personal Injury Crashes 1984	Number Injured 1984	Average Injured 1979-1983	Property Damage Crashes 1984
Aitkin	275	243	3	3	5	97	147	118	175
Anoka	4,478	4,303	24	26	26	1,529	2,318	2,219	2,925
Becker	446	522	4	5	9	182	285	302	260
Beltrami	586	625	6	6	7	199	306	274	381
Benton	658	636	8	9	9	208	335	311	442
Big Stone	96	118	4	4	2	32	56	49	60
Blue Earth	1,482	1,614	6	7	10	399	555	580	1,077
Brown	556	635	3	3	5	160	222	263	393
Carlton	444	500	5	5	5	121	183	221	318
Carver	880	858	7	8	10	264	400	447	609
Cass	386	362	12	18	8	117	186	206	257
Chippewa	225	264	2	3	6	64	88	114	159
Chisago	612	531	3	3	9	163	230	262	446
Clay	1,314	1,209	7	7	10	295	425	417	1,012
Clearwater	122	104	6	6	2	49	83	61	67
Cook	122	114	0	0	1	35	49	57	87
Cottonwood	210	216	0	0	2	64	79	88	146
Crow Wing	1,105	1,056	14	14	13	329	508	452	762
Dakota	5,066	4,663	18	20	34	1,490	2,217	2,233	4,037
Dodge	230	267	2	2	3	72	122	131	156
Douglas	727	672	4	4	7	210	304	313	513
Faribault	216	283	6	6	4	66	95	117	144
Fillmore	325	361	3	3	4	100	147	181	222
Freeborn	827	809	6	6	7	235	343	351	586
Goodhue	925	956	4	4	11	292	402	414	629
Grant	117	90	2	2	1	36	45	44	79
Hennepin	31,171	30,213	63	67	94	9,175	12,750	12,862	26,711
Houston	317	313	5	5	4	112	171	155	200
Hubbard	238	265	3	3	5	93	141	141	142
Isanti	450	394	2	2	5	159	241	210	289
Itasca	696	754	7	8	13	265	391	399	424
Jackson	222	244	1	1	2	48	64	100	173
Kanabec	187	186	3	4	4	65	110	90	119
Kandiyohi	1,153	971	6	6	9	324	467	419	823
Kittson	66	75	1	1	2	22	27	36	43
Koochiching	258	294	2	2	3	109	186	155	147
Lac Qui Parle	132	170	2	3	4	37	49	67	93
Lake	237	262	1	1	3	69	89	125	167
Lake Of The Woods	48	62	1	1	1	14	25	33	33
Le Sueur	508	513	3	6	3	157	229	223	348
Lincoln	119	114	2	2	2	30	44	53	87
Lyon	390	451	6	9	6	135	197	66	249
Mcleod	726	669	12	13	4	210	307	283	504
Mahnomen	58	80	1	1	2	16	25	42	41
Marshall	119	156	0	0	4	42	80	86	77
Martin	397	472	4	5	4	119	165	222	274

TABLE 1.25 (CONTINUED)

1984 COUNTY CRASH REPORT

County	All Crashes 1984	Average Crashes 1979-1983	Fatal Crashes 1984	Number Killed 1984	Average Killed 1979-1983	Personal Injury Crashes 1984	Number Injured 1984	Average Injured 1979-1983	Property Damage Crashes 1984
Meeker	432	409	6	7	6	116	174	172	310
Mille Lacs	344	378	6	7	6	96	160	200	242
Morrison	628	588	6	7	9	217	353	320	405
Mower	750	825	8	8	6	211	306	332	531
Murray	132	139	2	2	3	36	60	59	94
Nicollet	509	549	0	0	5	153	235	217	356
Nobles	461	473	3	3	3	91	126	171	367
Norman	107	112	1	1	2	33	50	47	73
Olmsted	2,457	2,399	17	19	14	718	1,065	1,009	1,722
Otter Tail	861	829	8	10	13	292	468	396	561
Pennington	263	310	2	2	3	111	176	146	150
Pine	318	333	10	11	7	97	150	157	211
Pipestone	180	201	1	1	1	38	49	69	141
Polk	630	680	2	2	9	173	243	276	455
Pope	147	166	4	5	3	40	59	67	103
Ramsey	15,476	15,916	33	34	46	3,804	5,196	5,615	11,639
Red Lake	79	75	2	2	3	31	44	27	46
Redwood	230	290	0	0	4	76	109	145	154
Renville	258	303	6	6	6	68	114	154	184
Rice	1,063	1,032	8	12	9	292	410	483	763
Rock	221	215	2	2	2	46	76	61	173
Roseau	153	157	2	2	4	52	92	67	99
St Louis	3,285	4,548	22	25	42	990	1,415	1,664	2,273
Scott	1,247	1,122	4	4	10	392	562	562	851
Sherburne	651	601	5	6	9	246	388	316	400
Sibley	237	237	2	3	3	83	146	115	152
Stearns	2,965	2,845	17	22	26	766	1,125	1,220	2,182
Steele	638	674	3	3	2	179	233	257	456
Stevens	159	185	1	1	1	35	50	71	123
Swift	174	193	0	0	2	58	85	74	116
Todd	380	409	7	7	7	131	215	194	242
Traverse	48	69	0	0	2	20	25	32	28
Wabasha	396	439	8	8	6	119	188	198	269
Wadena	267	265	2	5	2	85	129	103	180
Waseca	313	352	2	2	6	102	161	151	209
Washington	2,350	2,271	9	12	20	760	1,106	1,095	1,581
Watonwan	203	230	0	0	2	52	72	93	151
Wilkin	169	194	4	4	4	44	86	85	121
Winona	1,127	1,172	9	9	11	284	378	433	834
Wright	1,152	1,118	10	13	16	394	592	577	748
Yellow Medicine	175	195	2	3	4	55	93	94	118

FIGURE 1.09

COUNTY CRASH MAP

MINNESOTANS KILLED/INJURED IN 1984

Example: $\frac{1}{50}$ = 1 killed,50 injured

TABLE 1.26

1984 CRASHES BY CITY*

City	Fatal Crashes	Number Killed	Non-Fatal Injury Crashes	Number Injured	Property Damage Crashes	Total Crashes
Albert Lea	2	2	133	182	372	507
Alexandria	1	1	93	133	276	370
Andover	4	4	45	70	80	129
Anoka	3	4	162	224	333	498
Apple Valley	0	0	114	171	289	403
Arden Hills	2	3	82	124	202	286
Austin	1	1	127	163	350	478
Bemidji	0	0	91	130	249	340
Blaine	3	3	282	431	525	810
Bloomington	5	5	807	1,088	2,204	3,016
Brainerd	3	3	127	182	424	554
Brooklyn Center	3	3	305	399	730	1,038
Brooklyn Park	2	2	333	458	632	967
Burnsville	3	3	338	541	765	1,106
Champlin	1	1	55	80	124	180
Chanhassen	3	4	59	89	153	215
Chaska	1	1	65	102	145	211
Chisholm	0	0	17	22	46	63
Cloquet	1	1	60	84	164	225
Columbia Heights	1	1	132	186	302	435
Coon Rapids	2	3	257	394	554	813
Cottage Grove	0	0	92	131	153	245
Crookston	0	0	40	52	120	160
Crystal	0	0	157	224	265	422

* Cities of at least 5,000 population.

TABLE 1.26 (CONTINUED)

1984 CRASHES BY CITY*

City	Fatal Crashes	Number Killed	Non-Fatal Injury Crashes	Number Injured	Property Damage Crashes	Total Crashes
Detroit Lakes	1	2	54	76	97	152
Duluth	8	8	450	611	934	1,392
Eagan	3	3	154	215	405	562
East Bethel	1	1	33	58	57	91
East Grand Forks	0	0	53	69	189	242
Eden Prairie	3	3	192	288	524	719
Edina	2	2	298	384	640	940
Elk River	0	0	58	100	122	180
Eveleth	0	0	16	26	74	90
Fairmont	1	1	53	71	190	244
Falcon Heights	0	0	42	60	119	161
Faribault	1	1	119	165	292	412
Fergus Falls	0	0	63	91	185	248
Fridley	3	3	301	443	507	812
Golden Valley	1	1	316	445	655	972
Grand Rapids	0	0	56	73	183	239
Ham Lake	1	1	65	104	121	187
Hastings	1	1	75	102	233	309
Hibbing	1	1	102	150	332	435
Hopkins	0	0	134	169	347	481
Hutchinson	0	0	73	104	240	313
International Falls	0	0	46	72	74	120
Inver Grove Heights	4	5	154	227	272	430

* Cities of at least 5,000 population.

TABLE 1.26 (CONTINUED)

1984 CRASHES BY CITY*

City	Fatal Crashes	Number Killed	Non-Fatal Injury Crashes	Number Injured	Property Damage Crashes	Total Crashes
Lake Elmo	0	0	28	48	69	97
Litchfield	0	0	34	41	114	148
Little Canada	1	1	97	130	252	350
Little Falls	0	0	53	85	154	207
Mankato	0	0	274	359	741	1,015
Maple Grove	1	1	82	112	215	298
Maplewood	2	2	250	375	705	957
Marshall	0	0	68	91	98	166
Mendota Heights	0	0	77	100	203	280
Minneapolis	25	26	4,338	6,109	10,671	15,034
Minnetonka	4	4	313	445	703	1,020
Montevideo	0	0	32	46	81	113
Moorhead	1	1	191	274	821	1,013
Morris	0	0	16	21	86	102
Mounds View	3	3	75	104	132	210
New Brighton	2	2	105	139	274	381
New Hope	1	1	106	132	272	379
New Ulm	1	1	78	99	184	263
Northfield	2	2	46	62	180	228
North Mankato	0	0	36	51	83	119
North St. Paul	0	0	73	104	188	261
Oakdale	0	0	57	83	108	165
Orono	1	1	64	85	130	195
Owatonna	0	0	70	98	271	341

* Cities of at least 5,000 population.

TABLE 1.26 (CONTINUED)

1984 CRASHES BY CITY*

City	Fatal Crashes	Number Killed	Non-Fatal Injury Crashes	Number Injured	Property Damage Crashes	Total Crashes
Plymouth	1	2	240	313	526	767
Prior Lake	0	0	73	111	109	182
Ramsey	0	0	47	68	60	107
Red Wing	0	0	114	143	266	380
Redwood Falls	0	0	18	26	77	95
Richfield	0	0	336	448	848	1,184
Robbinsdale	0	0	147	201	216	363
Rochester	4	4	435	622	1,196	1,635
Rosemount	2	2	58	91	119	179
Roseville	1	1	243	347	828	1,082
St. Cloud	0	0	442	621	1,411	1,853
St. Louis Park	3	3	366	497	861	1,230
St. Paul	19	19	2,506	3,343	7,956	10,481
St. Peter	0	0	50	71	121	171
Sauk Rapids	0	0	38	51	86	124
Shakopee	1	1	90	132	264	355
Shoreview	0	0	71	93	213	284
South St. Paul	0	0	99	124	336	435
Spring Lake Park	1	1	57	89	103	161
Stillwater	0	0	81	96	193	274
Thief River Falls	0	0	62	90	104	166
Vandais Heights	0	0	51	68	157	208
Virginia	0	0	46	59	179	225
Waseca	0	0	33	43	102	135

* Cities of at least 5,000 population.

TABLE 1.26 (CONTINUED)

1984 CRASHES BY CITY*

City	Fatal Crashes	Number Killed	Non-Fatal Injury Crashes	Number Injured	Property Damage Crashes	Total Crashes
West St. Paul	0	0	152	231	332	484
White Bear Lake	0	0	143	180	428	571
Willmar	1	1	171	238	569	741
Winona	0	0	184	238	497	681
Woodbury	0	0	90	128	189	279
Worthington	0	0	52	68	244	296

* Cities of at least 5,000 population.

PART II

PEDESTRIAN CRASHES

Pedestrians must be considered to be among the most vulnerable of potential traffic crash victims. This is confirmed by comparing the 1984 pedestrian rate of 32.5 fatalities per 1,000 pedestrian crashes to the overall 1984 rate of 5.8 fatalities per 1,000 crashes of all types. This means that pedestrians are 5.7 times more likely to be killed than are persons involved in traffic crashes of all types.

Despite the fact that pedestrian crashes comprised only 1.7 percent of all 1984 traffic crashes, 3.9 percent of all persons injured and 9.4 percent of all traffic fatalities were pedestrians. The number of pedestrian crashes increased to its highest level in five years, partly due to the redefining of a "pedestrian crash." Prior to 1984, a pedestrian crash was defined as a crash in which a pedestrian was the first thing struck. In 1984, pedestrian crashes included all crashes in which a pedestrian was involved. The total of 1,682 pedestrians injured is the highest in six years; however, 1984's fatality figure of 55 was the lowest in more than a decade.

The age distribution of pedestrians killed in 1984 was broad, with 75-year-olds and over being the largest group, followed by 15 to 19-year-olds. The 15-19 age category also had the largest number of injuries, with 5 to 9-year-olds following closely behind. Unlike the fatality distribution, however, the elderly were not as prominent among those injured.

More pedestrians were killed on Thursday, Friday, and Saturday (ten fatalities each of those days) than any other day of the week, and 45 percent were killed between 3:00 p.m. and 8:00 p.m. A second peak occurs between 1:00 a.m. and 2:00 a.m. for both injuries and fatalities. More injuries occurred from Tuesday through Saturday than on Sundays or Mondays. More fatalities took place in November than in any other month, and October and December were the most common months for pedestrians to be injured.

Many pedestrians were killed or injured while crossing a roadway in an area not protected by a traffic control device, and the vehicles which hit them were most often proceeding straight along the roadway.

About one-third of all pedestrian fatalities occurred in rural areas with populations of fewer than 1,000 persons per city or township, while more than one third of pedestrian injuries occurred in cities with populations over 100,000. This is possibly due to the relatively higher proportion of high speed roadways in rural areas.

TABLE 2.01

PEDESTRIAN CRASHES, INJURIES, FATALITIES, 1975-1984

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Pedestrian Crashes*	1,925	1,723	**	1,731	1,700	1,629	1,648	1,374	1,516	1,690
Pedestrians Injured	1,918	1,726	**	1,723	1,678	1,636	1,658	1,438	1,625	1,682
Pedestrians Killed	121	120	140	115	117	114	100	76	62	55

*A "PEDESTRIAN CRASH" IS A CRASH IN WHICH A PEDESTRIAN WAS STRUCK BY A MOTOR VEHICLE.

**PEDESTRIAN INJURY INFORMATION IS NOT AVAILABLE FOR 1977.

TABLE 2.02

1984 PEDESTRIAN CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Total Crashes
January	3	153	156
February	5	109	114
March	3	124	127
April	4	111	115
May	6	125	131
June	7	134	141
July	3	124	127
August	3	131	134
September	5	144	149
October	4	168	172
November	8	144	152
December	4	168	172
Total	55	1635	1690

Figure 2.01

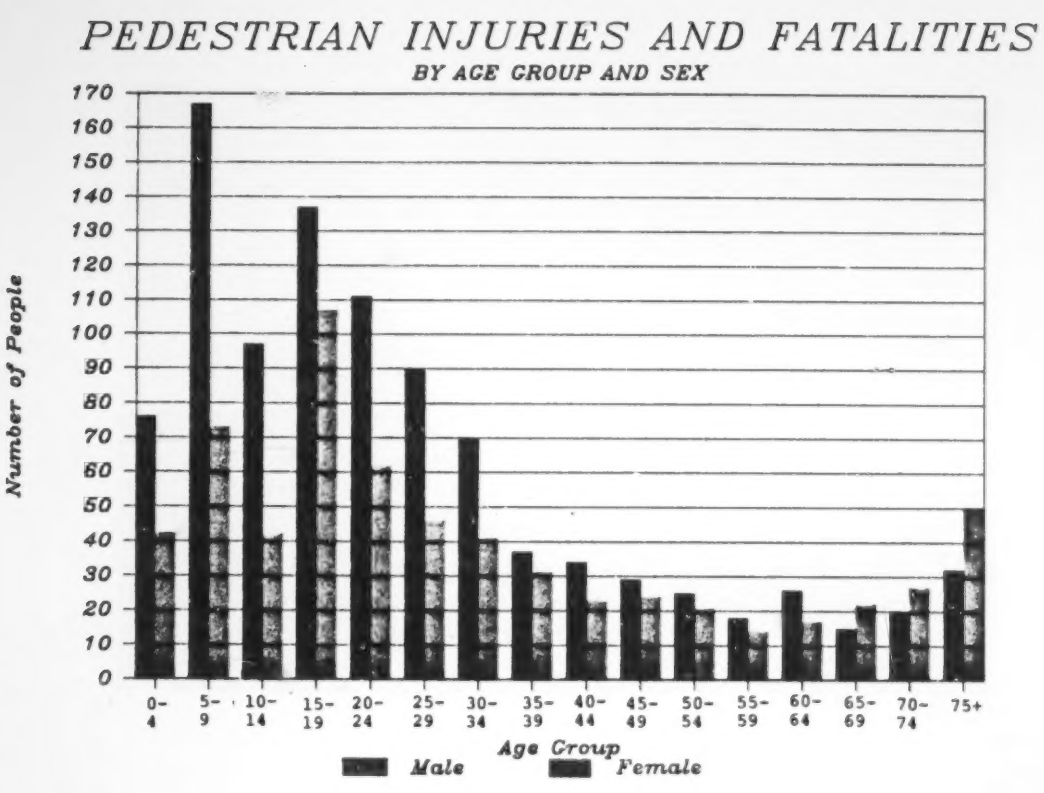

TABLE 2.03

AGE AND SEX OF 1984 PEDESTRIAN FATALITIES

Age Group	Male	Female	Total
0- 4	0	1	1
5- 9	2	4	6
10-14	2	0	2
15-19	4	3	7
20-24	3	1	4
25-34	6	0	6
35-44	3	0	3
45-54	4	1	5
55-64	3	1	4
65-74	5	1	6
75 & Over	5	5	10
Not Stated	0	1	1
Total	37	18	55

TABLE 2.04

AGE AND SEX OF PEDESTRIAN INJURED IN 1984

Age Group	Severe			Moderate			Possible			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
0- 4	25	15	40	27	19	46	24	7	31	76	41	117
5- 9	51	18	69	62	28	90	52	23	75	165	69	234
10-14	30	22	52	29	29	58	36	20	56	95	71	166
15-19	43	36	79	48	44	92	42	24	66	133	104	237
20-24	41	18	59	42	21	63	36	22	58	119	61	180
25-29	35	12	47	21	23	44	30	11	41	86	46	132
30-34	18	15	33	31	16	47	19	10	29	68	41	109
35-39	14	12	26	9	11	20	11	8	19	34	31	65
40-44	8	4	12	10	12	22	16	7	23	34	23	57
45-49	12	7	19	7	8	15	9	8	17	28	23	51
50-54	11	9	20	5	10	15	6	2	8	22	21	43
55-59	11	10	21	3	3	6	3	0	3	17	13	30
60-64	8	11	19	9	4	13	7	2	9	24	17	41
65-69	4	9	13	6	8	14	4	5	9	14	22	36
70-74	5	12	17	6	8	14	5	6	11	16	26	42
75 & Over	15	23	38	9	8	17	5	14	19	29	45	74
Not Stated	11	5	16	7	16	23	11	18	29	29	39	68
Total	342	238	580	331	268	599	316	187	503	989	693	1682

TABLE 2.05

POPULATION OF LOCATION WHERE 1984 PEDESTRIAN CRASHES OCCURRED

Population of City or Township	Fatal Crashes	Personal Injury Crashes	Total Crashes
100,000 and Up	11	603	614
50,000 - 99,999	1	87	88
25,000 - 49,999	5	183	188
10,000 - 24,999	9	198	207
5,000 - 9,999	4	85	89
2,500 - 4,999	2	36	38
1,000 - 2,499	3	21	24
Under 1,000	18	122	140
Unknown	2	300	302
Total	55	1635	1690

TABLE 2.06

VEHICLE MOVEMENT IN 1984 PEDESTRIAN CRASHES

Vehicle Movement	Fatal Crashes	Personal Injury Crashes	Total Crashes
Vehicle Going Straight	45	972	1017
Vehicle Turning Left	3	169	172
Vehicle Turning Right	1	88	89
Vehicle Backing	0	112	112
All Others	6	232	238
Not Stated	0	62	62
Total	55	1635	1690

TABLE 2.07

1984 Pedestrian Fatalities and Injuries by Day and Time

Hour Beginning	Sunday		Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Total	
	Fat.	Inj.	Fat.	Inj.	Fat.	Inj.	Fat.	Inj.	Fat.	Inj.	Fat.	Inj.	Fat.	Inj.	Fatalities	Injuries
Midnight	1	14	0	3	0	7	0	4	1	9	0	4	1	13	15	3
1:00 am	3	33	0	2	0	9	0	7	1	10	0	9	1	34	36	2
2:00 am	0	9	0	0	0	1	0	1	0	2	0	1	0	7	9	0
3:00 am	0	2	0	1	0	0	0	0	0	0	0	1	0	4	2	1
4:00 am	0	3	0	0	0	1	0	1	0	0	1	1	2	2	3	0
5:00 am	0	3	0	2	0	1	0	0	0	1	0	0	0	0	3	2
6:00 am	0	0	0	1	0	3	1	5	0	9	0	1	0	1	0	1
7:00 am	0	0	1	14	0	10	1	13	0	13	0	15	0	0	0	14
8:00 am	0	0	0	9	0	7	0	12	0	8	0	8	0	1	0	9
9:00 am	0	3	0	6	0	11	0	5	2	4	0	8	0	5	3	6
10:00 am	0	2	0	8	0	7	0	5	0	7	0	4	0	15	2	8
11:00 am	0	4	1	5	0	10	0	9	1	10	0	10	0	10	4	5
Noon	0	10	0	6	0	8	0	5	0	9	1	12	1	10	10	6
1:00 pm	0	7	1	9	0	16	1	12	0	3	0	18	1	23	7	9
2:00 pm	0	6	0	14	0	17	0	10	0	11	1	12	0	9	6	14
3:00 pm	0	12	1	20	0	30	0	29	0	19	1	38	1	23	12	20
4:00 pm	0	13	1	21	0	26	1	22	1	21	0	30	1	13	13	21
5:00 pm	0	9	1	18	1	18	0	35	1	17	1	32	1	14	9	19
6:00 pm	1	5	0	14	0	11	1	21	2	17	0	17	0	13	6	14
7:00 pm	1	5	0	12	1	18	0	12	0	14	3	27	1	19	6	13
8:00 pm	1	6	0	11	0	11	2	17	0	8	0	12	0	19	7	11
9:00 pm	0	9	0	9	0	11	0	11	1	10	1	24	0	12	9	9
10:00 pm	1	6	2	2	0	3	0	8	0	5	0	17	0	5	7	2
11:00 pm	0	6	0	3	0	5	0	6	0	5	1	11	0	18	6	3
Unknown	0	4	0	9	0	5	0	9	0	6	0	6	0	1	4	9
Total	8	171	8	199	2	246	7	259	10	218	10	318	10	271	179	201

Figure 2.02

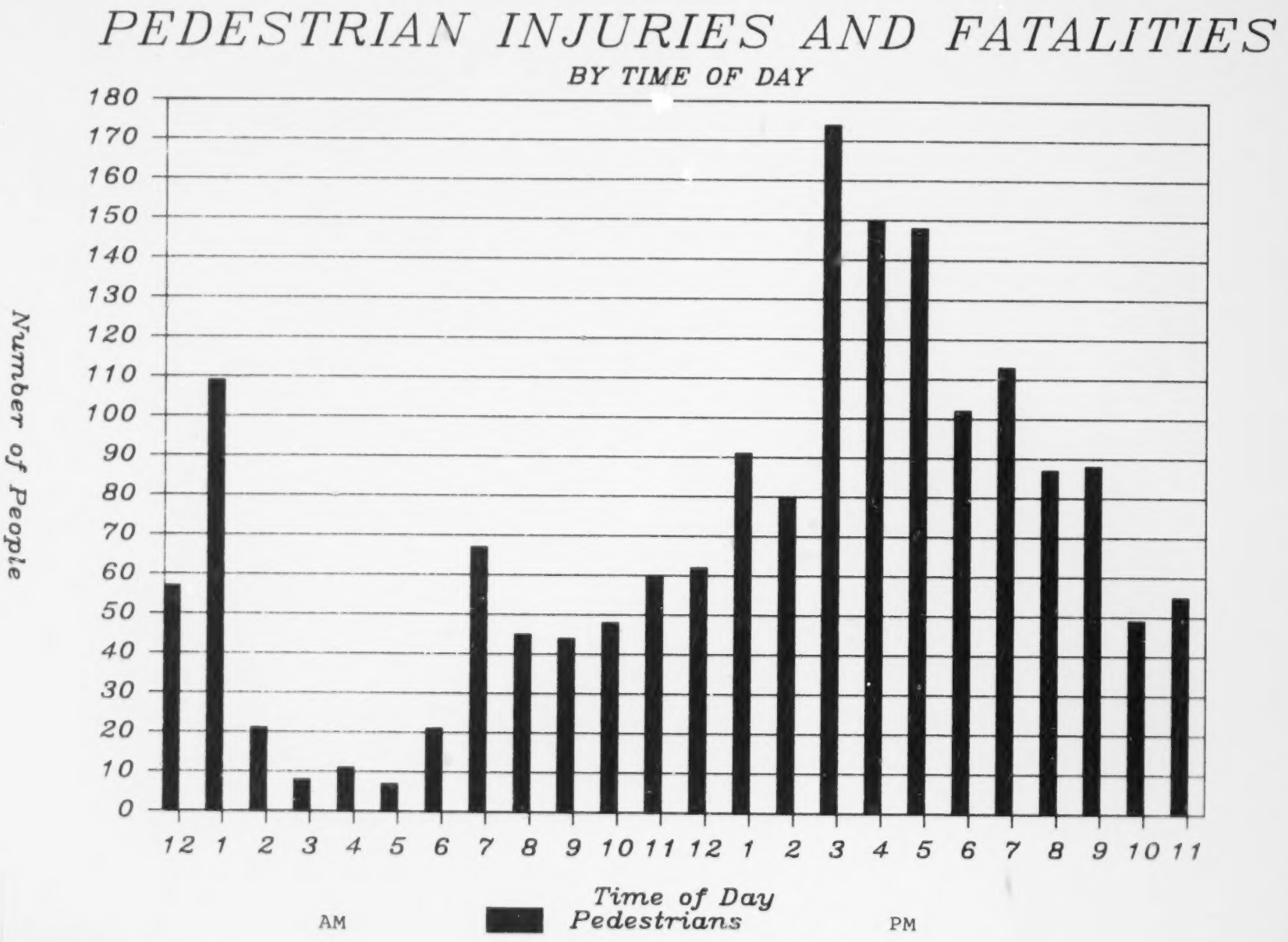
PEDESTRIAN INJURIES AND FATALITIES
BY TIME OF DAY
Number of People
180
170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11
AM
PM
Time of Day
Pedestrians

TABLE 2.08

PRIOR ACTION OF PEDESTRIANS KILLED AND INJURED IN 1984

Action	Number Killed	Number Injured
Crossing With Signal	3	217
Crossing Against Signal	4	91
Crossing In Crosswalk No Signal	4	68
Crossing No Crosswalk No Signal	15	406
Walking In Road With Traffic	3	81
Walking In Road Against Traffic	1	50
Standing In Road	2	92
Emerging From Front/Behind Parked Car	2	124
Child Getting On/Off School Bus	1	6
Getting On/Off Vehicle	0	14
Pushing/Working On Vehicle	0	18
Working In Road	1	11
Playing In Road	1	30
Not In Road	4	74
Other Pedestrian Action	14	399
Unknown	0	1
Total	55	1682

PART III

BICYCLE INFORMATION

It is difficult to compare bicycle accidents from year to year because of the difficulty in measuring the level of bicycling done each year. Bicycling is increasing in popularity as a means of transportation and recreation but we are unable to determine if the increases in accidents in the past two years has been greater or less than the increase in bicycle usage.

The number of bicycle crashes in 1984 was 1,282, five percent below the record high of 1,350 in 1974 and nearly 17 percent above the low of 1,067 accidents in 1979. The number of bicycle injuries in 1984 was 1,258, merely three percent lower than the record high of 1,295 in 1980, and nearly 20 percent above the record low of 993 injured bicyclists recorded in 1979. Fifteen bicyclists were killed in motor vehicle accidents in 1984; 27 people died in 1972 (the worst year for bicycle fatalities).

Approximately 20 percent of the bicycle crashes took place in each of the three summer months when most of Minnesota's bicycle riding is done. In contrast to many other types of accidents, bicycle crashes happen least often on weekends and most often in midweek. Forty percent of all bicycle accidents, injuries and fatalities occur in the late afternoon from 3 p.m. through 6 p.m.

The largest number of bicycle accidents (32 percent) took place in high traffic density cities with populations over 100,000. Fatal bicycle crashes took place most often (53 percent) in rural areas with populations less than 1,000 where a larger proportion of high speed roadways exist.

Since most bicyclists ride with instead of against the flow of traffic, it is not surprising that 36 percent of the people injured were riding with traffic. Another substantial fraction, 23 percent, were crossing a roadway when the accident occurred.

As in past years, males injured or killed outnumbered females by more than two to one. The age group most liable to be involved in bicycle accidents also remained the same: 10 to 14 years olds were involved in 34 percent of all bicycle crashes.

The most mentioned contributing factor in accidents involving bicycles was driver inattention or distraction; drivers did not notice the other vehicle until it was too late in 30 percent of the accidents. The second most mentioned contributing factor was failure to yield the right of way: 27 percent of the motor vehicle drivers in error and 14 percent of the bicyclists in error listed this as a factor. The 10 to 14 year-old males made roughly the same types of errors as other bicyclists. They simply made them much more often.

It should be noted that the crash data included in this section meets the same criteria as other included data. To be included as an official motor vehicle crash a bike accident must involve a motor vehicle and result in death, injury or property damage of at least $500.

TABLE 3.01

BICYCLE-INVOLVED CRASHES, INJURIES, FATALITIES, 1975-1984

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Bicycle Crashes*	1,302	1,217	**	1,154	1,067	1,276	1,255	1,130	1,220	1,282
Bicyclists Injured	1,202	1,114	**	1,105	993	1,295	1,213	1,105	1,194	1,258
Bicyclists Killed	23	21	24	23	14	19	10	12	14	15

* A "BICYCLE CRASH" IS A CRASH IN WHICH THE FIRST OBJECT THAT WAS STRUCK BY A MOTOR VEHICLE WAS A BICYCLIST.

** BICYCLIST INJURY INFORMATION IS NOT AVAILABLE FOR 1977.

TABLE 3.02

1984 BICYCLE CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	All Crashes
January	0	1	0	1
February	0	15	0	15
March	3	20	1	24
April	0	91	2	93
May	0	159	1	160
June	4	247	5	256
July	1	248	3	252
August	2	242	3	247
September	2	122	2	126
October	3	74	0	77
November	0	25	0	25
December	0	6	0	6
Total	15	1250	17	1282

TABLE 3.03

1984 BICYCLISTS INJURED AND KILLED BY TIME AND DAY

Hour Beginning	Total	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Midnight	21	1	0	3	3	5	5	4
1:00 AM	11	3	1	1	0	3	0	3
2:00 AM	1	0	0	0	1	0	0	0
3:00 AM	1	0	1	0	0	0	0	0
4:00 AM	0	0	0	0	0	0	0	0
5:00 AM	5	0	0	0	0	0	2	3
6:00 AM	8	0	1	1	3	0	2	1
7:00 AM	42	0	13	8	7	5	8	1
8:00 AM	29	1	4	8	5	7	3	1
9:00 AM	28	2	3	1	4	6	9	3
10:00 AM	38	3	5	8	5	6	4	7
11:00 AM	48	5	9	6	8	3	8	9
Noon	83	8	9	11	10	18	16	11
1:00 PM	75	9	12	10	8	12	11	13
2:00 PM	80	9	11	13	17	7	9	14
3:00 PM	124	15	21	20	21	15	19	13
4:00 PM	150	6	27	26	31	23	27	10
5:00 PM	152	9	27	22	33	23	22	16
6:00 PM	105	10	16	15	20	18	11	15
7:00 PM	95	9	23	17	8	14	14	10
8:00 PM	64	8	7	7	19	14	3	6
9:00 PM	52	5	7	10	9	8	8	5
10:00 PM	23	3	5	1	3	3	5	3
11:00 PM	15	1	2	0	4	2	4	2
Unknown	23	1	4	6	4	5	3	0
Total	1,273	108	208	194	223	197	193	150

Figure 3.01

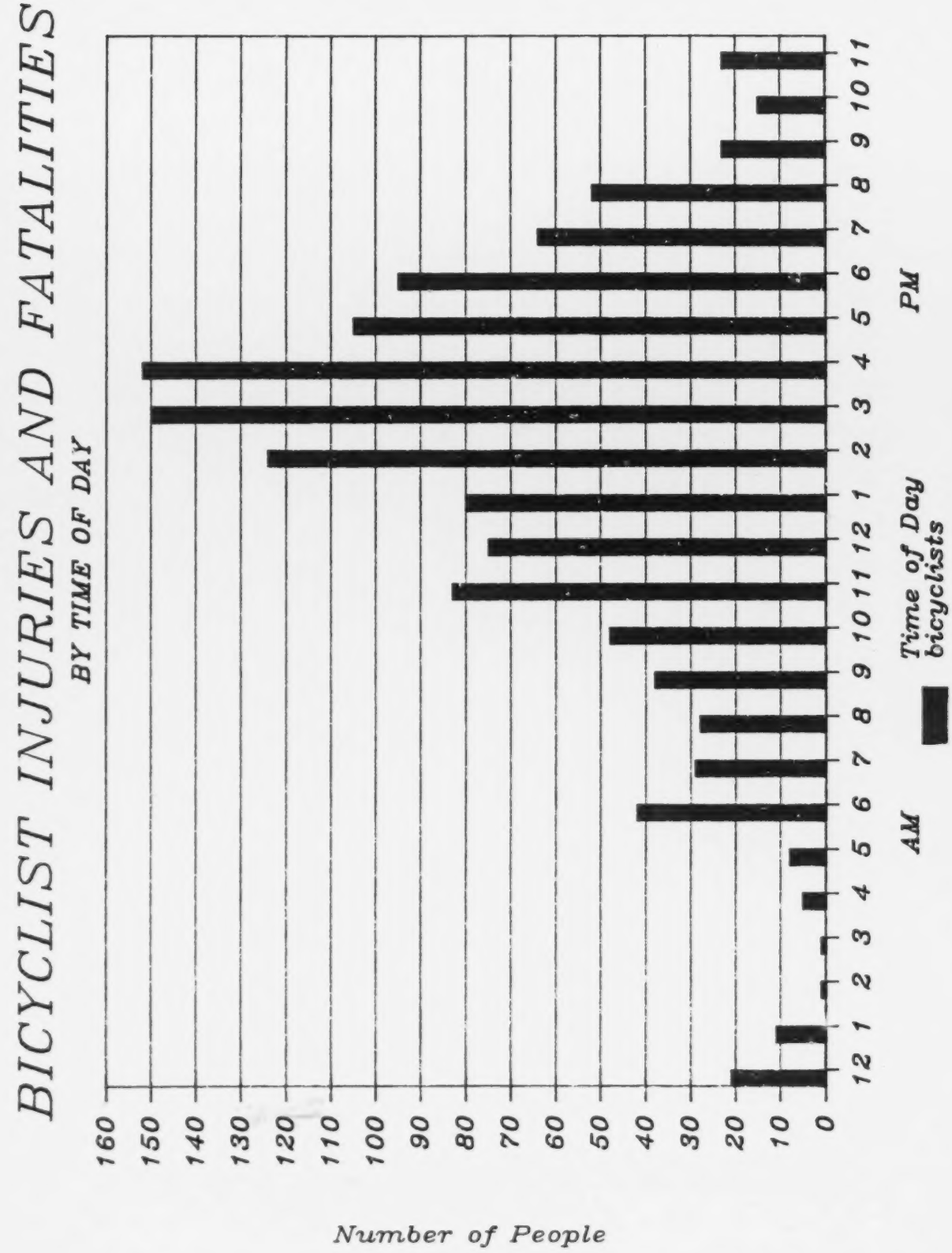
BICYCLIST INJURIES AND FATALITIES
BY TIME OF DAY
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
Number of People
12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11
AM
PM
Time of Day
bicyclists

TABLE 3.04

AGE AND SEX OF BICYCLISTS INJURED AND KILLED

Age Group	Killed			Severe Injury			Moderate Injury			Possible Injury		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
0- 4	0	0	0	2	1	3	3	3	6	3	1	4
5- 9	2	1	3	29	7	36	75	13	88	34	10	44
10-14	4	1	5	54	16	70	171	65	236	82	42	124
15-19	3	0	3	43	21	64	84	43	127	34	18	52
20-24	0	0	0	17	21	38	45	34	79	38	14	52
25-29	1	0	1	9	8	17	35	8	43	22	4	26
30-34	0	0	0	7	5	12	16	7	23	7	2	9
35-39	1	0	1	7	0	7	9	3	12	2	1	3
40-44	0	0	0	6	1	7	6	3	9	2	1	3
45-49	0	0	0	1	0	1	4	0	4	2	1	3
50-54	0	1	1	1	0	1	1	2	3	0	0	0
55-59	0	0	0	1	0	1	3	0	3	0	0	0
60-64	0	0	0	2	0	2	1	0	1	0	1	1
65-69	0	0	0	1	0	1	1	2	3	0	0	0
70-74	0	0	0	0	0	0	1	0	1	0	0	0
75 & over	1	0	1	1	0	1	2	1	3	1	0	1
Not Stated	0	0	0	3	1	4	10	6	16	10	4	14
Total	12	3	15	184	81	265	467	190	657	237	99	336

Figure 3.02

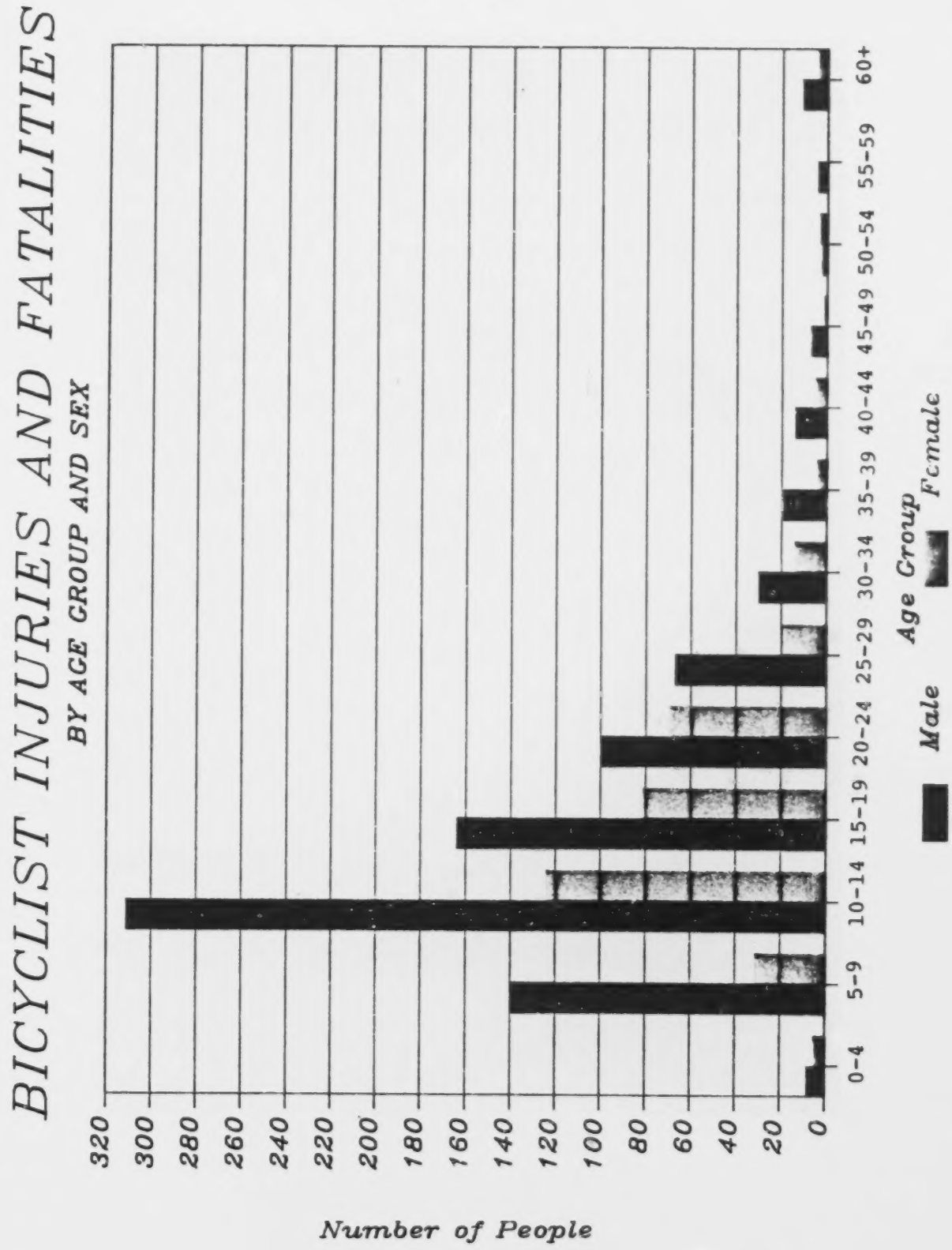
BICYCLIST INJURIES AND FATALITIES
BY AGE GROUP AND SEX
320
300
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
Number of People
0-4
5-9
10-14
15-19
20-24
25-29
30-34
35-39
40-44
45-49
50-54
55-59
60+
Age Group
Male
Female

TABLE 3.05

CONTRIBUTING FACTORS IN 1984 BICYCLE CRASHES BY DRIVER TYPE

Contributing Factors	Percent of Motor Vehicle Drivers in Error	Percent of All Bicycle Drivers In Error	Percent of 5-14 Year Old Male Bicycle Drivers In Error
Failure to Yield Right of Way	27.1	13.9	16.8
Illegal/Unsafe Speed	3.8	1.6	1.9
Following Too Closely	1.6	.5	.4
Disregard For Traffic Control Device	3.0	10.6	9.0
Driving Left of Roadway Center--Not Passing	1.2	3.9	2.7
Improper Passing/ Overtaking	3.9	.7	.4
Improper/Unsafe Lane Use	2.5	9.3	8.4
Improper Parking/ Starting/Stopping	3.0	.8	.9
Improper Turn	3.6	5.1	5.7
Unsafe Backing	1.4	0.0	0.0
No/Improper Signal	.6	.6	.8
Impeding Traffic	.2	.4	.6
Driver Inattention/ Distraction	32.7	31.0	27.9
Driver Inexperience	1.8	8.3	12.0
Had Been Drinking	2.5	1.3	0.0
Vision Obscured	10.4	5.3	6.3
Defective Equipment	.5	3.9	3.1
Pedestrian Violation/ Error	0.0	1.8	1.9
Other Violation	.2	.8	1.1

TABLE 3.06

PRIOR ACTION OF BICYCLE DRIVERS INVOLVED IN CRASHES IN 1984

Action	Fatal Crashes	Injury Crashes	Property Damage Crashes	All* Crashes
Riding With Traffic	3	459	3	465
Riding Against Traffic	1	112	0	113
Making Left Turn	3	65	3	71
Making Right Turn	1	21	0	22
Making U Turn	0	5	0	5
Riding Across Road	2	296	5	303
Slowing, Starting, Stopping	0	19	0	19
Other/Unknown	6	286	6	298
Total	16	1263	17	1296

* The number of bicycle drivers exceeds the number of bicycle crashes because more than one bicycle may be involved in a crash.

TABLE 3.07

POPULATION OF LOCATION WHERE 1984 BICYCLE CRASHES OCCURRED

Population City or Township	Fatal Crashes	Severe Injury Crashes	Moderate Injury Crashes	Possible Injury Crashes	Property Damage Crashes	All Crashes
100,000 and Over	2	70	206	126	7	411
50,000 - 99,999	1	15	43	21	2	82
25,000 - 49,999	2	54	130	52	3	241
10,000 - 24,999	0	50	110	59	1	220
5,000 - 9,999	1	19	32	19	0	71
2,500 - 4,999	0	10	22	14	0	46
1,000 - 2,499	0	2	14	6	0	22
Under 1,000	8	21	35	11	2	77
Unknown	1	22	62	25	2	112
Total	15	263	654	333	17	1282

PART IV

MOTORCYCLE CRASHES

On April 7, 1977, Minnesota revised its motorcycle helmet law so that only persons who are under age 18 or who are operating a motorcycle with a learner's permit are required to wear a helmet. At that time motorcyclist fatalities increased significantly.

In the five years prior to the change in the helmet law, Minnesota had an average of 58 motorcyclist fatalities each year. In the five years following repeal Minnesota has had an average of 100 fatalities per year.

1983 and 1984, however, were years in which fatalities dropped back to pre-repeal figures, an auspicious note in Minnesota's motorcycle history considering the lack of a helmet law.

The ratio of licensed operators to registered motorcycles continues to increase as it has since 1975, indicating that possibly more people are obtaining motorcycle endorsements but riding a family or friend's motorycycle. Despite this trend, a study of 1984 fatal motorcycle accidents showed that approximately one-third of the cyclists killed were illegally operating a motorcycle, almost all of them without an endorsement.

Overturns and collisions with fixed objects comprised one-third of the motorcycle accidents, twice the percentage associated with these accident types for all motor vehicle crashes.

As expected, the summer months showed the most motorcycle accidents, and 5:00 p.m. - 6:00 p.m. was the most common time of occurrence. Fifty percent of all injuries and fatalities occurred on weekends, and, of those injured or killed, 88 percent were male and 35 percent were age 20-24.

Of the 45 fatally injured motorcyclists who were tested for blood alcohol content, 23 (41 percent) were intoxicated, and 71 percent had some alcohol in their blood at the time of the accident. This compares with 45 percent intoxication and 55 percent positive alcohol results of other motor vehicle drivers tested (See Table 9.04, p. 80). Indications on police reports show 37 percent alcohol involvement in fatal crashes and 19 percent in all motorcycle crashes.

Helmet usage in motorcycle accidents improved in 1984, with 40 percent of fatalities and 45 percent of injured motorcyclists wearing their helmets, compared with 18 percent usage for fatalities and 38 percent usage for those injured in 1983 motorcycle crashes.

Over half of all fatal motorcycle crashes took place in rural areas with populations of fewer than 1,000 persons per city or township, probably due to the higher proportion of high speed roadways in rural areas. But unlike bicycle and pedestrian crashes in which most injuries occurred in the largest cities, more motorcycle injury crashes occurred in rural areas with populations under 1,000 (24 percent) than in urbanized areas with populations over 100,000 (17.6 percent).

TABLE 4.01

MOTORCYCLE CRASH SUMMARY, 1975-1984

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Total Accidents	2,400	2,460	2,718	2,827	2,872	3,308	3,063	2,518	2,811	2,768
Fatal Accidents	62	61	88	103	95	112	92	72	70	59
Personal Injury Accidents	1,818	1,862	2,120	2,345	2,391	2,728	2,516	2,115	2,377	2,302
Persons Killed:	72	62	94	107	98	122	96	76	66	63
Motorcycle Operators	61	55	85	89	83	107	84	55	56	56
Motorcycle Passengers	2	2	9	17	14	14	12	15	10	5
Others/Unknown	9	5	0	1	1	1	0	6	0	2*
Persons Injured:	2,247	2,266	2,564	2,907	2,904	3,393	3,070	2,570	2,869	2,797
Motorcyclists	2,205	2,223	2,522	2,860	2,833	3,359	2,874	2,381	2,678	2,590
Others	42	43	42	47	71	34	196	189	191	207
Licensed Operators	127,081	152,138	172,223	184,545	201,075	222,330	238,926	246,134	252,808	256,836
Registered Motorcycles	136,256	143,237	151,763	151,016	156,552	157,815	166,151	159,345	155,502	153,851
Rates:										
Fatal Motorcycle Crashes Per 100 Motorcycle Crashes	2.6	2.5	3.2	3.6	3.3	3.4	3.0	2.9	2.5	2.1
Fatal Crashes Per 100 Crashes (All Vehicles)	0.5	0.6	0.6	0.7	0.7	0.7	0.7	0.6	0.5	0.5
Motorcyclist Fatalities Per 10,000 Motorcycle Registrations	4.6	4.0	6.2	7.0	6.2	7.7	5.8	4.5	4.7	4.0
Motorcyclist Injuries Per 10,000 Motorcycle Registrations	161.8	155.2	166.2	189.4	181.0	212.8	173.0	149.4	172.2	165.5
Total Motorcycle Crashes Per 10,000 Motorcycle Registrations	176.1	171.7	179.1	187.2	183.5	209.6	184.4	158.0	180.8	179.9

Helmet Law May 1, 1968
Eye Protection and Lights On Law August 1, 1975
Helmet Law Repeal April 7, 1977

1983 and 1984 injury figures include some all-terrain vehicles. Fatality figures do not.

* In one case it could not be determined whether the motorcyclist was a passenger or an operator of the motorcycle.

Figure 4.01

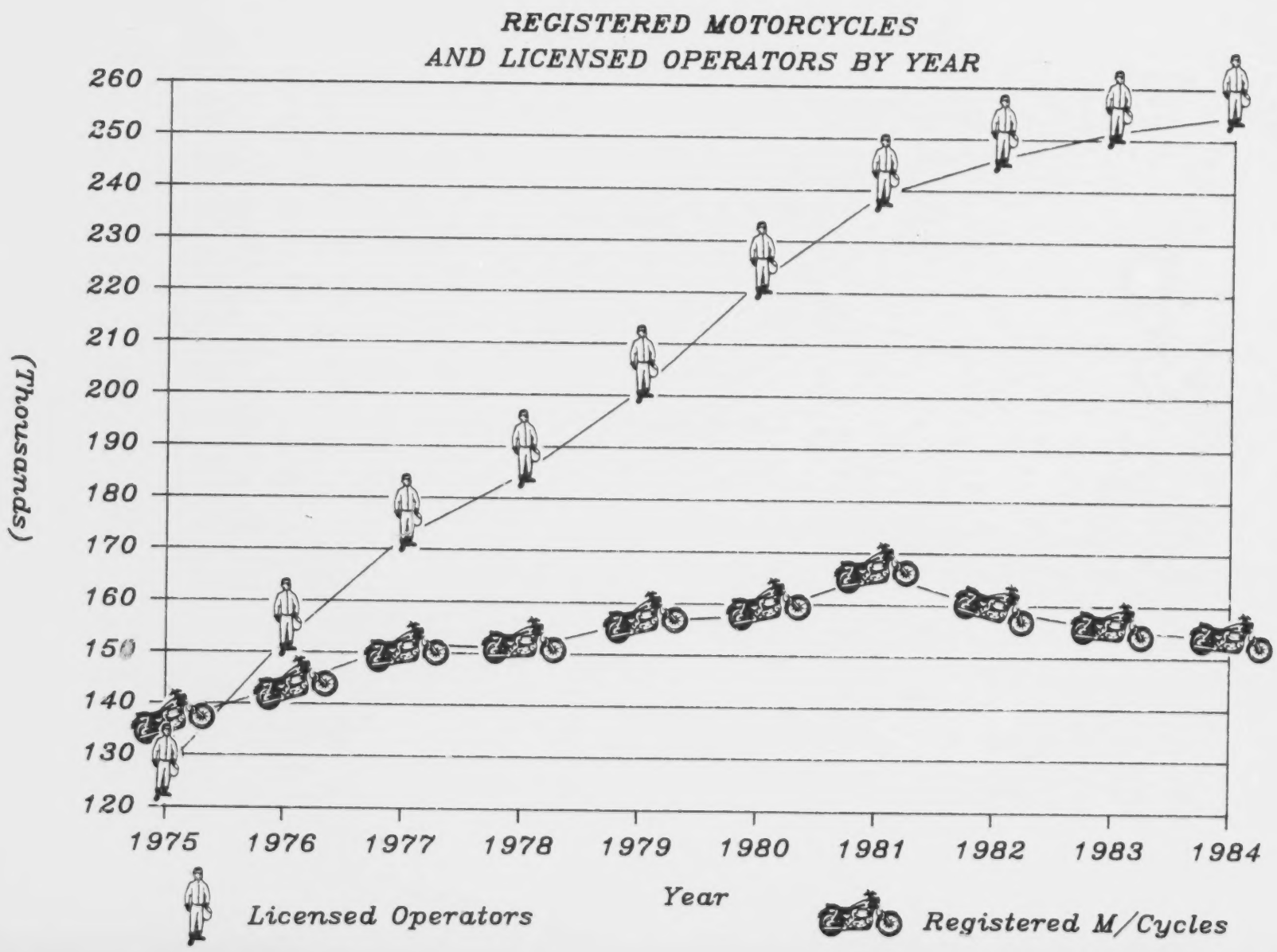
REGISTERED MOTORCYCLES
AND LICENSED OPERATORS BY YEAR
260
250
240
230
220
210
200
190
180
170
160
150
140
130
120
(Thousands)
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
Year
Licensed Operators
Registered M/Cycles

TABLE 4.02

1984 MOTORCYCLE-INVOLVED CRASHES BY ACCIDENT TYPE

Accident Type	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes
Collision With Other Motor Vehicle*	32	1,146	250	1,428
Collision With Parked Motor Vehicle	1	42	77	120
Collision With Railroad Train	1	1	0	2
Collision With Bicyclist	0	33	1	34
Collision With Pedestrian	0	23	0	23
Collision With Animal	0	82	5	87
Collision With Fixed Object	17	298	16	331
Collision With Other Object	0	35	4	39
Overturn	7	540	37	584
Fire/Explosion	0	0	0	0
Submersion	0	0	0	0
Other/Unknown	1	102	17	120
Total	59	2,302	407	2,768

* Four of the fatal motorcycle crashes were collisions between two motorcycles.

TABLE 4.03

1984 MOTORCYCLIST CRASHES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes
January	0	6	0	6
February	0	7	3	10
March	0	28	11	39
April	4	172	36	212
May	11	347	55	413
June	10	416	72	498
July	13	478	60	551
August	12	433	83	528
September	4	256	63	323
October	3	132	19	154
November	2	23	4	29
December	0	4	1	5
Total	59	2302	407	2768

Figure 4.02

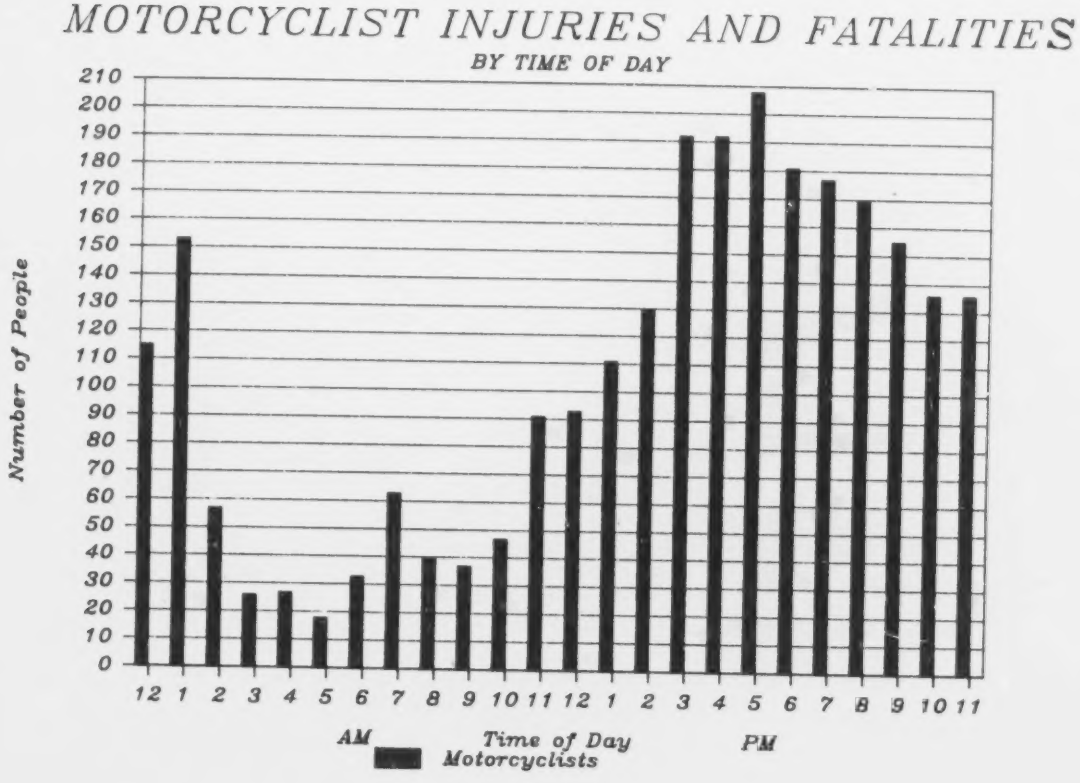

TABLE 4.04

1984 MOTORCYCLE FATALITIES AND INJURIES
BY TIME OF DAY AND DAY OF WEEK

Hour Beginning	Total Injuries		Sunday		Monday		Tuesday		Wednesday		Thursday		Friday		Saturday	
	All	Fatal	All	Fatal	All	Fatal	All	Fatal	All	Fatal	All	Fatal	All	Fatal	All	Fatal
Midnight	115	3	14	1	16	0	10	0	17	0	9	1	21	0	28	1
1:00	153	3	36	1	8	0	7	0	16	1	14	0	22	0	50	1
2:00	57	1	16	0	3	0	4	0	6	1	13	0	4	0	11	0
3:00	26	0	5	0	1	0	6	0	5	0	2	0	2	0	5	0
4:00	27	2	5	0	3	1	1	0	2	1	4	0	2	0	10	0
5:00	18	2	4	1	4	0	3	0	0	0	5	0	2	1	0	0
6:00	33	1	3	0	8	0	3	0	2	0	11	0	2	0	4	1
7:00	63	2	0	0	9	0	13	1	17	0	12	0	9	1	3	0
8:00	40	1	2	0	4	0	9	1	7	0	4	0	7	0	7	0
9:00	37	2	5	2	4	0	3	0	4	0	4	0	8	0	9	0
10:00	47	0	3	0	5	0	7	0	4	0	7	0	7	0	14	0
11:00	91	2	21	0	10	0	3	0	9	0	18	0	14	0	16	0
Noon	93	1	21	1	13	0	3	0	16	0	10	0	18	0	12	0
1:00	111	0	19	0	10	0	17	0	10	0	14	0	20	0	21	0
2:00	130	2	34	1	14	0	10	1	18	0	7	0	24	0	23	0
3:00	192	4	27	0	21	0	33	0	26	0	26	2	34	1	25	1
4:00	192	3	27	0	14	1	29	1	32	1	20	0	33	0	37	0
5:00	208	2	26	0	27	0	20	1	41	0	32	0	30	0	32	1
6:00	181	4	36	0	19	0	22	0	17	1	21	1	26	2	40	0
7:00	177	3	27	0	19	0	18	0	35	1	21	0	28	0	29	2
8:00	170	7	19	3	27	0	29	2	26	1	19	0	23	0	27	1
9:00	155	6	28	1	20	0	16	0	23	0	16	1	22	2	30	2
10:00	136	0	22	0	16	0	21	0	20	0	17	0	21	0	19	0
11:00	136	7	16	1	12	1	17	0	22	1	16	1	38	0	15	3
Not Stated	64	4	11	0	6	0	8	1	5	0	11	2	13	1	10	0
Total	2652	62	427	12	293	3	312	8	380	8	333	8	430	8	477	13

TABLE 4.05

AGE AND SEX OF 1984 MOTORCYCLIST FATALITIES

Age Group	Male	Female	Total
0- 4	0	0	0
5- 9	0	0	0
10-14	2	0	2
15-19	8	0	8
20-24	23	2	25
25-29	10	2	12
30-34	9	0	9
35-39	1	0	1
40-44	3	0	3
45 & Over	1	1	2
Not Stated	0	0	0
Total	57	5	62

TABLE 4.06

AGE AND SEX OF MOTORCYCLISTS INJURED IN 1984 CRASHES

Age Group	Severe Injury			Moderate Injury			Possible Injury		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
0- 4	2	0	2	0	0	0	0	0	0
5- 9	2	1	3	2	0	2	0	0	0
10-14	21	3	24	15	4	19	2	2	4
15-19	133	33	166	271	46	317	97	22	119
20-24	248	29	277	404	41	445	158	10	168
25-29	136	16	152	195	29	224	81	8	89
30-34	76	9	85	95	10	105	38	7	45
35-39	38	4	42	62	5	67	15	2	17
40-44	19	4	23	29	6	35	10	0	10
45 & Over	30	6	36	45	6	51	18	2	20
Not Stated	3	4	7	13	10	23	9	4	13
Total	708	109	817	1131	157	1288	428	57	485

Figure 4.03

MOTORCYCLIST INJURIES AND FATALITIES

BY AGE GROUP AND SEX

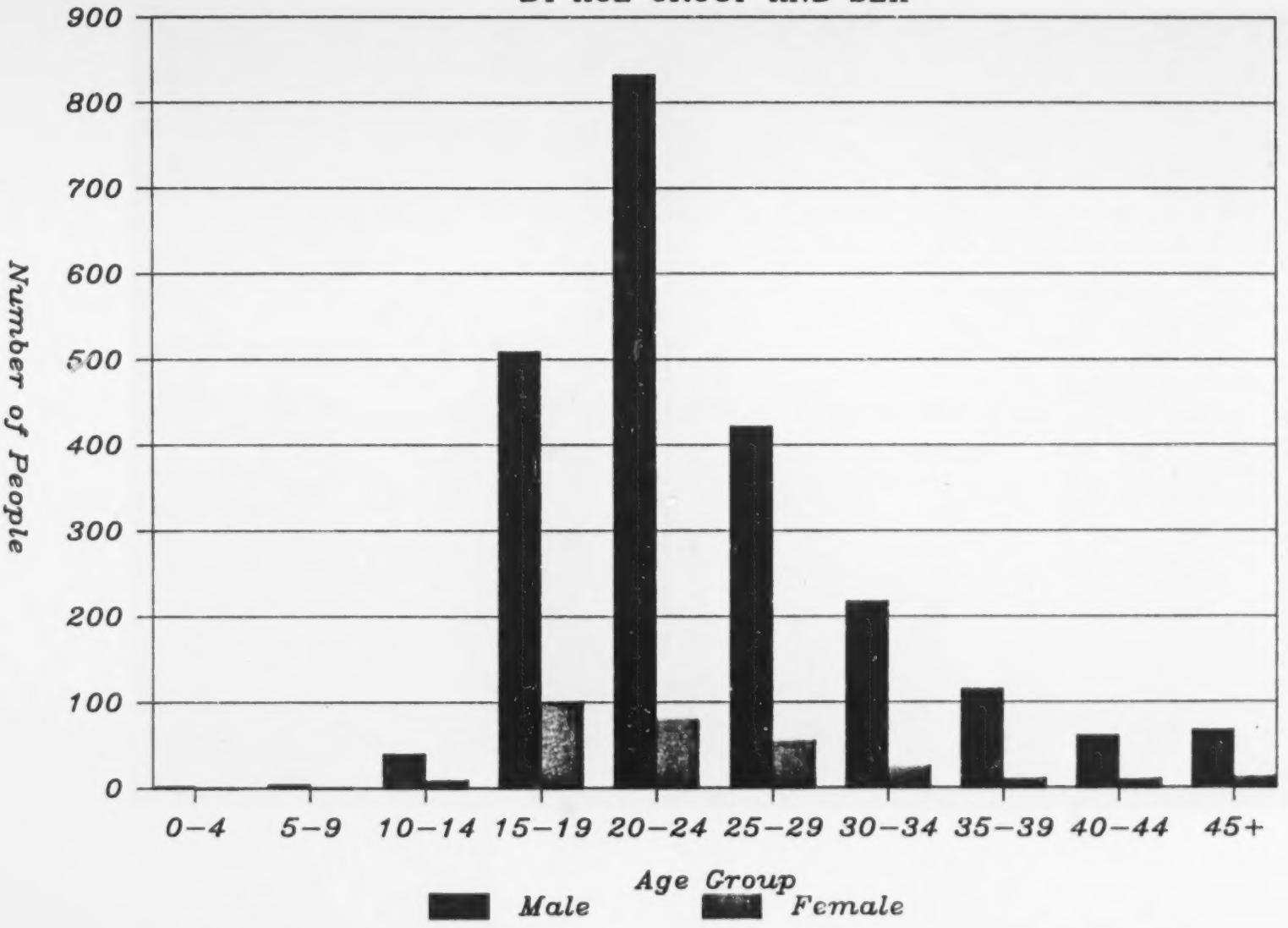

TABLE 4.07

HELMET USAGE BY MOTORCYCLISTS KILLED AND INJURED IN 1984 CRASHES

Helmet Usage	Number Killed			Number Injured		
	Driver	Passenger	Unknown	Driver	Passenger	Unknown
Used	19	0		619	67	
Not Used	28	4		654	192	
Unknown	9	1	1	871	143	44
Total*	56	5	1	2144	402	44

TABLE 4.08

PHYSICAL CONDITION OF MOTORCYCLE OPERATORS
IN 1984 CRASHES

	Fatal Injury	Severe Injury	Moderate Injury	Possible Injury	Property Damage	Total
Normal	14	498	763	301	194	1770
Under the Influence	8	81	93	30	10	222
Had been Drinking	15	116	122	38	18	309
Had been Using Drugs	0	1	1	0	0	2
Asleep	0	0	3	1	0	4
Fatigued	0	2	1	0	1	4
Other	2	5	5	2	2	16
Unknown	24	92	148	50	192	506
Total	63	795	1136	422	417	2833

Also see Table 9.04, page 80, for level of intoxication.

TABLE 4.09

POPULATION OF LOCATION WHERE 1984 MOTORCYCLE CRASHES OCCURRED

Population of City or Township	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes
100,000 and Over	5	405	99	509
50,000 - 99,999	4	120	18	142
25,000 - 49,999	5	332	66	403
10,000 - 24,999	2	367	46	415
5,000 - 9,999	4	174	33	211
2,500 - 4,999	3	92	23	118
1,000 - 2,499	1	47	9	57
Under 1,000	32	553	60	645
Unknown	3	212	53	268
Total	59	2302	407	2768

PART V

MOTOR VEHICLE/TRAIN CRASHES

1984 was a favorable year for motor vehicle/train crashes. After a slight upturn in 1983, total motor vehicle/train crashes in Minnesota continued a downward trend, recording the lowest number of total crashes (149) in five years. Fatalities also decreased over 1983 from fifteen to eleven, the second lowest since 1980. A 14 percent decrease in injuries was recorded between 1983 and 1984, from eighty-five to seventy-three, less than half the 1980 figure.

More crashes took place during the months of December and March than any other month, more occurred during the time period from noon to 3:00 p.m., and more occurred on Monday than any other day of the week.

Driver inattention and disregard for traffic control device, especially railroad flashing lights, were the two most commonly cited factors contributing to motor vehicle/train crashes in 1984.

TABLE 5.01

MOTOR VEHICLE/TRAIN CRASHES, 1980 - 1984

	1980	1981	1982	1983	1984
Total Crashes	271	192	164	174	149
Fatal Crashes	12	13	5	11	7
Property Damage Crashes	204	124	86	94	86
Fatalities	15	15	7	15	11
Injuries	152	102	92	85	73

TABLE 5.02

1984 MOTOR VEHICLE/TRAIN CRASHES, INJURIES, FATAL CRASHES, FATALITIES BY MONTH

Month	Fatal Crashes	Injury Crashes	Property Damage Crashes	Total Crashes
January	1	3	12	16
February	0	3	7	10
March	1	8	12	21
April	1	5	5	11
May	1	4	6	11
June	0	6	5	11
July	0	5	4	9
August	1	2	6	9
September	1	8	7	16
October	1	3	4	8
November	0	1	5	6
December	0	8	13	21
Total	7	56	86	149

TABLE 5.03

1984 MOTOR VEHICLE/TRAIN CRASHES BY TIME AND DAY

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	TOTAL
Midnight-2:59 AM	6	3	3	2	3	2	0	19
3:00 - 5:59 AM	0	1	1	1	1	1	2	7
6:00 - 8:59 AM	0	2	3	3	6	2	2	18
9:00 - 11:59 AM	1	4	3	3	2	3	2	18
Noon-2:59 PM	1	7	6	1	1	6	5	27
3:00 - 5:59 PM	2	3	2	4	2	3	1	17
6:00 - 8:59 PM	1	6	3	1	2	3	6	22
9:00 - 11:59 PM	1	1	5	1	5	3	2	18
Unknown	1	0	0	0	0	1	1	3
Total	13	27	26	16	22	24	21	149

TABLE 5.04

AGE AND SEX OF PERSONS IN 1984 MOTOR VEHICLE/TRAIN CRASHES

Age Group	Fatalities			Injuries		
	Male	Female	Total	Male	Female	Total
0- 4	0	0	0	0	1	1
5- 9	0	0	0	1	0	1
10-14	0	0	0	1	1	2
15-19	2	1	3	9	9	18
20-24	5	0	5	7	2	9
25-34	1	0	1	8	3	11
35-44	0	0	0	2	3	5
45-54	0	0	0	7	0	7
55-64	1	0	1	4	3	7
65-74	1	0	1	3	2	5
75 & Over	0	0	0	3	1	4
Not Stated	0	0	0	1	2	3
Total	10	1	11	46	27	73

TABLE 5.05

CONTRIBUTING FACTORS IN 1984 MOTOR VEHICLE/TRAIN CRASHES

CONTRIBUTING FACTOR	NUMBER	PERCENT
Failure to Yield	36	20.2
Illegal/Unsafe Speed	6	3.4
Disregard for Traffic Control Device	46	25.8
Improper Parking	4	2.2
Unsafe Backing	1	0.6
Inattention	53	29.8
Inexperience	5	2.8
Physical Impairment	8	4.5
Vision Obscured	13	7.3
Defective Equipment	3	1.7
Other Human Factor	3	1.7
Total	178	100.0

PART VI

SCHOOL BUS CRASHES

Total school bus crashes decreased from 687 in 1983 to 675 in 1984. However, personal injury crashes increased one percent during that time period. Fifteen to nineteen-year-olds were injured in more school bus accidents than any other age group, followed closely by five to nine year olds. Most of the accidents occurred during the school months of September through May, especially January, however, there were 39 crashes in the summer months of 1984, mostly property damage crashes.

Most school bus crashes occurred in areas where no traffic control devices were located. Where such a device was present, it was most often a stop sign, and next most frequently a taffic signal.

More school bus crashes happened during the school rush hours of 6:00 a.m. to 9:00 a.m. followed by 3:00 p.m. to 6:00 p.m. as would be expected.

Cities with a population of more than 100,000 were the site of more school bus accidents than any other cities.

TABLE 6.01

SCHOOL BUSES INVOLVED IN CRASHES, 1975-1984

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
School Buses Involved In All Crashes	708	599	724	708	866	678	692	737	694	686
School Buses Involved In Personal Injury Crashes	154	119	162	166	187	171	161	163	162	181
School Buses Involved In Fatal Crashes	2	9	1	2	6	1	2	2	7	3
Total Crashes Involving at Least One Schoolbus	696	597	*	698	852	672	681	729	687	675

* Not available.

TABLE 6.02

TRAFFIC CONTROL DEVICE AT SITE OF SCHOOL BUS ACCIDENTS - 1984

	Fatal Injury	Severe Injury	Moderate Injury	Possible Injury	Property Damage	Total
None	2	17	38	33	242	332
Traffic Signal	0	6	5	14	66	91
Overhead Flashers	1	0	0	0	4	5
Stop Sign - All Approaches	0	1	0	1	17	19
Other Stop Sign	0	7	11	20	83	121
Yield Sign	0	1	1	5	7	14
Flagman, Officer, or School Patrol	0	0	0	0	1	1
School Bus Stop Arm	0	2	6	1	11	20
School Zone Sign	0	0	0	0	1	1
RR Other	0	0	0	0	6	6
No Passing Zone	0	0	2	1	2	5
Other	0	0	2	0	2	4
Unknown	0	0	1	1	54	56
Total	3	34	66	76	496	675

TABLE 6.03

1984 SCHOOL BUS INVOLVED CRASHES BY ACCIDENT TYPE

Accident Type	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes
Collision With Other Motor Vehicle	2	150	412	564
Collision With Parked Motor Vehicle	0	10	57	67
Collision With Railroad Train	0	0	0	0
Collision With Bicyclist	0	1	0	1
Collision With Pedestrian	1	6	0	7
Collision With Animal	0	0	4	4
Collision With Fixed Object	0	3	14	17
Collision With Other Object	0	1	2	3
Overturn	0	3	6	9
Other	0	2	1	3
Total	3	176	496	675

TABLE 6.04

AGE AND SEX OF PERSONS KILLED & INJURED IN 1984 SCHOOL BUS CRASHES

Age	Fatalities			Injuries		
	Male	Female	Total	Male	Female	Total
0- 4	0	0	0	6	2	8
5- 9	0	1	1	32	30	62
10-14	0	0	0	19	33	52
15-19	0	0	0	30	33	63
20-24	1	0	1	16	12	28
25-34	1	0	1	20	19	39
35-44	0	0	0	15	11	26
45-54	0	0	0	6	7	13
55-64	0	0	0	9	6	15
65 & Over	0	0	0	5	12	17
Unknown	0	0	0	7	10	17
Total	2	1	3	165	175	340

TABLE 6.05

1984 SCHOOL BUS CRASHES, INJURIES, FATAL CRASHES, FATALITIES BY MONTH

Month	Fatal Crashes	Fatalities	Injury Crashes	Injuries	Property Damage Crashes	Total Crashes
January	2	2	22	27	101	125
February	0	0	26	45	53	79
March	0	0	15	36	58	73
April	1	1	12	20	24	37
May	0	0	18	34	36	54
June	0	0	3	24	11	14
July	0	0	6	14	6	12
August	0	0	4	7	9	13
September	0	0	15	36	43	58
October	0	0	10	14	34	44
November	0	0	18	27	53	71
December	0	0	27	56	68	95
Total	3	3	176	340	496	675

TABLE 6.06

POPULATION OF LOCATION WHERE 1984 SCHOOL BUS CRASHES OCCURRED

Population of City or Township	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes
100,000 and Over	0	49	136	185
50,000 - 99,999	0	6	17	23
25,000 - 49,999	0	23	69	92
10,000 - 24,999	1	25	77	103
5,000 - 9,999	0	10	36	46
2,500 - 4,999	0	6	12	18
1,000 - 2,499	1	1	8	10
Under 1,000	1	42	53	96
Unknown	0	14	88	102
Total	3	176	496	675

TABLE 6.07

1984 SCHOOL BUS CRASHES BY TIME OF DAY

Time of Day	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes
Midnight - 2:59 AM	0	4	4	8
3:00 AM - 5:59 AM	0	0	2	2
6:00 AM - 8:59 AM	0	58	174	232
9:00 AM - 11:59 AM	0	27	60	87
Noon - 2:59 PM	1	23	70	94
3:00 PM - 5:59 PM	2	61	143	206
6:00 PM - 8:59 PM	0	1	15	16
9:00 PM - 11:59 PM	0	0	13	13
Unknown	0	2	15	17
Total	3	176	496	675

PART VII

DRIVER AGE INFORMATION

In 1984, 185,306 drivers were involved in traffic crashes; this means that one out of every 16 licensed drivers had an accident. Of the drivers involved in fatal crashes, 76 percent were male, 22 percent were female, and two percent were not identified as to gender. Of the drivers involved in all crashes, 58 percent were male, 30 percent were female, and 12 percent were not identified. One out of every 14 licensed men and one out of every 25 licensed women had an accident in 1984.

Young drivers are overrepresented in crashes. While drivers 16 to 20 years old hold 10 percent of the licenses, they represent 17 percent of the drivers in accidents. Drivers ages 21 to 25 were slightly overrepresented and drivers at least 26 years old are consistently underrepresented. Nearly one out of every 10 drivers between 16 and 20 was in a crash in 1984; one out of every 14 drivers 21 to 25 was involved in a crash. This slowly increases until the over 71 age group in which only one out of every 34 drivers was involved in a crash.

Younger drivers are much more likely to be involved in collisions with fixed objects and vehicle overturn crashes; these are usually single vehicle accidents and are often linked to speeding and drinking. As drivers grow older, their accidents are more likely to be with other motor vehicles.

Drivers 66 and older who are in error are nearly two times more likely than other drivers to fail to yield the right of way when they are involved in crashes. Speed is mentioned as a factor contributing to the crash for 17 percent of the drivers in error who were 16 through 25 years old; this factor is mentioned less often as drivers age. Driver inattention and distraction is a factor mentioned for approximately 25 percent of all drivers in error regardless of their age.

For licensed drivers in Minnesota see Table 1.18. For alcohol involvement by age see Section IX.

TABLE 7.01

AGE AND SEX OF DRIVERS IN 1984 CRASHES*

	Fatal Crashes				All Crashes			
Age Group	Male	Female	Not Stated	Total	Male	Female	Not Stated	Total
15 & under	0	0	1	1	409	182	0	591
16-20	111	36	0	147	20,609	10,683	8	31,300
21-25	103	26	0	129	18,468	9,729	2	28,199
26-30	75	15	0	90	13,799	7,201	11	21,011
31-35	61	19	0	80	10,305	5,871	6	16,182
36-40	52	12	0	64	7,575	4,397	2	11,974
41-45	31	9	0	40	5,483	3,228	5	8,716
46-50	25	5	0	30	4,317	2,305	0	6,622
51-55	22	7	0	29	3,892	1,906	2	5,800
56-60	28	6	0	34	3,596	1,779	1	5,376
61-65	17	1	0	18	2,918	1,394	1	4,313
66-70	10	4	0	14	2,188	1,212	0	3,400
71 & Over	28	12	0	40	3,891	1,883	3	5,777
Not Stated	57	19	18	94	10,007	4,572	21,466	36,045
Total	620	171	19	810	107,457	56,342	21,507	185,306

* Most crashes involve more than one driver. For that reason, the total number of drivers involved in fatal crashes and listed here will be greater than the total number of fatal crashes (which was 519 in 1984). Pedestrians and bicyclists are not included in drivers.

TABLE 7.02

AGE DISTRIBUTION OF LICENSED DRIVERS*

AND THEIR INVOLVEMENT IN 1984 CRASHES

Age Group	Percent of all Licensed Drivers	Percent of Drivers involved in Fatal Crashes	Percent of Drivers in Injury Crashes	Percent of Drivers in Property Damage Crashes	Percent of Drivers in All Crashes
15 & under	.5	1.0	.6	.2	.3
16-20	10.1	18.1	19.5	15.9	16.9
21-25	13.3	15.9	17.5	14.3	15.2
26-30	12.9	11.1	12.9	10.7	11.3
31-35	11.7	9.9	9.8	8.3	8.7
36-40	9.6	7.9	7.3	6.1	6.5
41-45	7.6	4.9	5.2	4.5	4.7
46-50	6.2	3.7	3.9	3.4	3.6
51-55	5.7	3.6	3.3	3.0	3.1
56-60	5.7	4.2	3.2	2.8	2.9
61-65	5.2	2.2	2.6	2.2	2.3
66-70	4.4	1.7	2.1	1.7	1.8
71 & Over	6.8	4.9	3.4	2.9	3.1
Not Stated	0.0	10.7	8.3	23.8	19.4

Includes drivers with instruction permits.

Figure 7.01

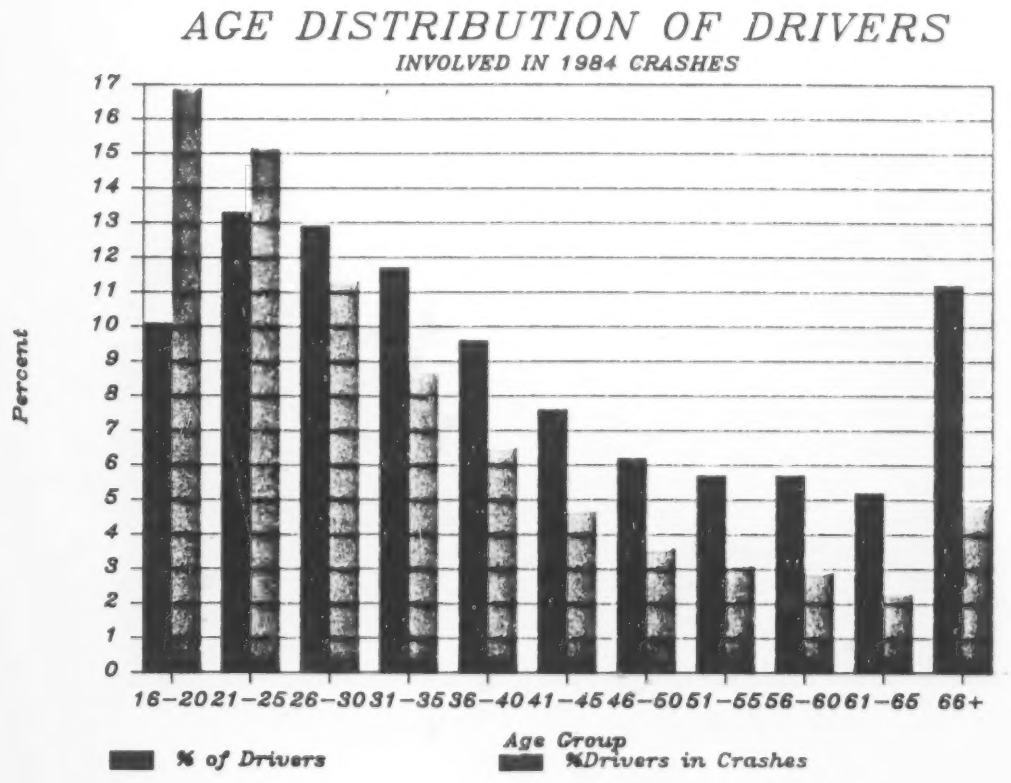

TABLE 7.03

PERCENTAGE OF LICENSED DRIVERS* INVOLVED IN 1984 CRASHES BY AGE GROUP

Age Group	Percentage of the Licensed Drivers Within an Age Group Who Were Involved In Fatal Crashes	Percentage of the Licensed Drivers Within an Age Group Who Were Involved In Injury Crashes	Percentage of the Licensed Drivers Within an Age Group Who Were Involved In Property Damage Crashes	Percentage of the Licensed Drivers Within an Age group Who Were Involved In a Crash
15 & under	.05	2.02	1.95	4.03
16 - 20	.05	3.45	7.17	10.67
21 - 25	.03	2.35	4.90	7.29
26 - 30	.02	1.79	3.78	5.59
31 - 35	.02	1.48	3.22	4.73
36 - 40	.02	1.36	2.90	4.28
41 - 45	.02	1.21	2.69	3.92
46 - 50	.02	1.12	2.52	3.66
51 - 55	.02	1.04	2.41	3.47
56 - 60	.02	1.00	2.20	3.21
61 - 65	.01	.90	1.93	2.84
66 - 70	.01	.86	1.76	2.62
71 & Older	.02	.93	1.95	2.90
Total*	.03	1.78	4.55	6.37

These rates are calculated by comparing the number of drivers who were involved in crashes in each age category to the total number of licensed drivers in that same age group.

* Includes drivers with instruction permits.

** The total indicates the percentage of licensed drivers who were involved in crashes, regardless of age group.

TABLE 7.04

1984 DRIVER AGE BY ACCIDENT TYPE

Accident Type	AGE OF DRIVER INVOLVED Drivers 16-20 (%)	Drivers 21-25 (%)	Drivers 26-30 (%)	Drivers 31-35 (%)	Drivers 36-65 (%)	Drivers 66 & above (%)
Collision With Other Motor Vehicle	72.7	75.9	79.1	79.7	82.6	84.3
Collision With Parked Motor Vehicle	6.0	5.1	4.3	4.0	3.7	5.9
Collision With Railroad Train	.1	.1	.1	.1	.1	.2
Collision With Bicyclist	.6	.6	.6	.8	.8	1.1
Collision With Pedestrian	.9	.9	.9	1.0	.9	.9
Collision with Animal	1.6	2.0	2.5	3.1	3.1	1.4
Collision With Fixed Object	11.8	9.6	7.8	6.8	5.4	4.3
Collision With Other Object	.4	.3	.5	.4	.3	.3
Overturn	5.0	4.4	3.2	3.2	2.1	1.0
Fire/Explosion	.0	.1	.0	.1	.1	.0
Submersion	.1	.0	.0	.0	.0	.0
Other	.8	.9	.8	.8	.7	.4

The percentages are based on the number of drivers within an age group.

Drivers exclude bicyclists and pedestrians.

TABLE 7.05

DRIVER AGE BY CONTRIBUTING FACTORS CITED IN 1984 CRASHES

CONTRIBUTING FACTOR	AGE OF DRIVER INVOLVED					
	Drivers 16-20 (%)	Drivers 21-25 (%)	Drivers 26-30 (%)	Drivers 31-35 (%)	Drivers 36-65 (%)	Drivers 66 & above (%)
Failure to Yield Right of Way	12.5	12.4	13.4	14.3	17.4	30.7
Illegal/Unsafe Speed	17.3	16.9	15.6	14.8	10.1	4.2
Following Too Closely	4.6	5.5	5.7	5.8	4.8	2.9
Disregard for Traffic Control Device	3.2	3.9	3.7	3.0	3.8	5.1
Driving Left of Center-- Not Passing	2.1	1.9	2.0	1.9	1.7	1.5
Improper Passing/ Overtaking	1.7	1.8	2.0	2.1	1.7	1.2
Improper/Unsafe Lane Use	3.8	4.5	4.4	4.4	5.0	5.1
Improper Parking/ Starting/Stopping	1.2	1.4	1.5	1.7	2.0	2.6
Improper Turn	2.4	2.5	2.7	2.7	3.3	4.3
Unsafe Backing	1.5	1.9	2.1	2.2	2.4	2.9
No/Improper Signal	.4	.4	.5	.3	.6	.4
Impeding Traffic	.3	.3	.4	.5	.5	.4
Driver Inattention/ Distraction	24.1	25.9	26.2	27.1	27.1	26.9
Driver Inexperience	10.4	3.5	2.6	2.3	1.8	.8
Physical Impairment	6.8	5.6	8.3	7.5	5.6	4.1
Vision Obscured	3.3	3.3	4.0	4.1	4.8	3.6
Defective Equipment	1.5	1.7	1.5	1.6	1.7	.8
Other	2.5	3.0	3.3	3.4	4.7	2.4

Percentages are based on all contributing factors cited within each age group.

Drivers exclude bicyclists and pedestrians.

PART VIII

HIT-AND-RUN CRASHES

Hit-and-run accidents continue to be a problem in Minnesota. In 1984, over 11 percent of all accidents involved a vehicle which left the scene. While only two percent of all fatal and four percent of all injury crashes involved a hit-and-run vehicle, 15 percent of all property damage crashes involved a vehicle of that type.

By category of crash types, hit-and-run accidents were not evenly distributed. Hit-and-run vehicles were involved in 53 percent of all collisions with parked vehicles, 12 percent of all bicycle collisions, and 14 percent of all pedestrian collisions.

Not surprisingly, more hit-and-run crashes occur at night. On an hourly basis, 32 percent of all hit-and-run crashes occurred between 9 p.m. and midnight, a change from 1983, when more hit-and-run crashes occurred between midnight and 3 a.m. than any other time period.

TABLE 8.01

1984 HIT-AND-RUN CRASHES BY ACCIDENT TYPE

Accident Type	Fatal Crashes	Personal Injury Crashes	Property Damage Crashes	Total Crashes
Collision With Other Motor Vehicle	1	612	2,396	3,009
Collision With Parked Motor Vehicle	0	74	7,003	7,077
Collision With Railroad Train	0	0	1	1
Collision With Bicyclist	3	139	6	148
Collision With Pedestrian	5	218	0	223
Collision With Animal	0	0	0	0
Collision with Fixed Object	0	73	1,096	1,169
Collision With Other Object	0	2	23	25
Overturn	0	11	31	42
Other/Unknown	0	3	25	28
Total	9	1,132	10,581	11,722

TABLE 8.02

1984 Hit-and-Run Crashes by Time of Day and Day of Week

	TOTAL		SUNDAY		MONDAY		TUESDAY		WEDNESDAY		THURSDAY		FRIDAY		SATURDAY	
	Injury*	All	Injury	All	Injury	All	Injury	All	Injury	All	Injury	All	Injury	All	Injury	All
Midnight-2:59 AM	207	1,781	49	466	11	110	19	129	20	150	26	201	22	206	60	519
3:00 - 5:59 AM	48	367	17	114	7	24	1	27	4	20	3	28	5	40	11	114
6:00 - 8:59 AM	56	684	4	63	8	117	14	106	9	105	9	106	10	112	2	75
9:00 - 11:59 AM	64	906	6	127	8	108	13	134	3	111	9	102	14	147	11	177
Noon-2:59 PM	119	1,147	6	158	16	155	25	154	19	163	10	131	15	175	28	211
3:00 - 5:59 PM	224	1,628	28	190	28	239	33	235	26	224	35	229	46	295	28	216
6:00 - 8:59 PM	182	1,464	20	136	21	208	23	208	28	201	32	202	27	277	31	232
9:00 - 11:59 PM	241	3,745	30	439	21	388	33	443	25	450	25	463	58	780	49	782
Total	1,141	11,722	160	1,693	120	1,349	161	1,436	134	1,424	149	1,462	197	2,032	220	2,326

* Injury Crashes include fatal crashes as well as personal injury crashes.

"All" category includes injury and property damage crashes.

PART X

ALCOHOL RELATED CRASHES

Even though the Minnesota laws dealing with drunk driving are considered among the best in the nation, drinking and driving continues to be our state's most serious traffic safety problem.

1984 was another year of activity in terms of the drunken driver problem in Minnesota. The 1984 Minnesota legislature further tightened the state's drunken driving laws and increased the severity of the penalties for certain offenses related to drunken driving. In 1984, a record number of drunken driving arrests were made (36,638, a 14 percent increase from 1983), and a record number of driver license revocations were made for alcohol-related offenses (43,502, a 5 percent increase from 1983).

There are currently two ways of measuring alcohol involvement in motor vehicle accidents. One is by the police officer's indication of the driver's physical condition. If "under the influence" or "had been drinking" are marked on the traffic accident report, the accident is coded as alcohol-related. Using this measure, only 218 or 37 percent of the 584 fatalities were alcohol-related. However, with the added resource of blood alcohol concentration test results of drivers and pedestrians a second, more accurate, picture of alcohol involvement can be drawn. A composite measure of 305 (52 percent) can be reached by adding those fatalities in which a driver or pedestrian had a blood alcohol level greater than .050 (considered alcohol-impaired), but whose accident report did not indicate alcohol involvement to the 218 fatalities which are identified on the accident report. This compares with 1983 national figures of 57 percent of fatally injured drivers testing positive and 46 percent intoxicated.

As usual, the largest number of positive-testing fatally injured driver cases occurred in May through August (35 percent). In 1984, however, November and December showed a large increase over those months in 1983 (23 percent as opposed to 11 percent). The hours of midnight to 3:00 a.m. accounted for 34 percent of the alcohol-positive driver fatalities, while the hours of 9:00 p.m. to midnight contributed the next highest proportion (24 percent).

Eighty-eight percent of the positive cases were males. The age-group covering those from 16 to 20 had the highest percentage of positive tests with 26 percent of the total, followed closely by the 21-25 age group with 24 percent of the total.

TABLE 9.01

DRINKING DRIVER SUMMARY - 1976-1984

	1976	1977	1978	1979	1980	1981	1982	1983	1984
Drunken Driving Arrests	19,419	16,976	18,078	18,092	22,788	27,034	28,048	32,155	36,638
Alcohol-Related Driver License Revocations	14,251	17,741	24,357	24,966	30,481	32,043	36,024	41,311	43,502
For Conviction of DWI Charge	NA	NA	15,512	14,797	17,406	19,009	9,400	5,462	5,334
Administrative Revocations For Refusing Test	NA	NA	3,344	3,427	3,863	4,427	8,456	11,155	11,413
For Failing Test (.10 or higher)	NA	NA	5,501	6,742	9,212	8,607	18,168	24,694	26,755
Drivers Killed	478	476	576	523	519	437	321	345	383
Tested (died within 4 hours)	61%	58%	66%	63%	65%	66%	72%	75%	83%
Positive (had been drinking)	64%	60%	63%	58%	69%	62%	54%	56%	58%
Drunk (.10 or higher)	53%	54%	51%	45%	58%	52%	48%	45%	47%

TABLE 9.02

DWI ARRESTS BY AGE 1981-1984

Age	1981	1982	1983	1984
Under 10	3	1	0	1
10-12	0	0	0	0
13-14	2	3	7	5
15	16	13	21	21
16	165	202	169	185
17	542	503	546	500
18	1,203	1,327	1,284	1,342
19	1,744	1,789	1,983	2,166
20	1,752	1,840	2,040	2,370
21	1,691	1,682	2,028	2,377
22	1,551	1,683	1,931	2,269
23	1,376	1,504	1,883	2,202
24	1,289	1,504	1,682	2,002
25-29	5,029	5,229	6,299	7,511
30-34	3,362	3,450	3,948	4,720
35-39	2,219	2,273	2,701	3,013
40-44	1,464	1,589	1,796	2,078
45-49	1,153	1,119	1,239	1,394
50-54	916	849	975	916
55-59	740	688	738	704
60-64	397	412	471	443
65 & over	420	388	414	419
TOTAL	27,034	28,048	32,155	36,638
Male	23,853	24,264	27,521	31,327
Female	3,181	3,784	4,634	5,311

Figure 9.01

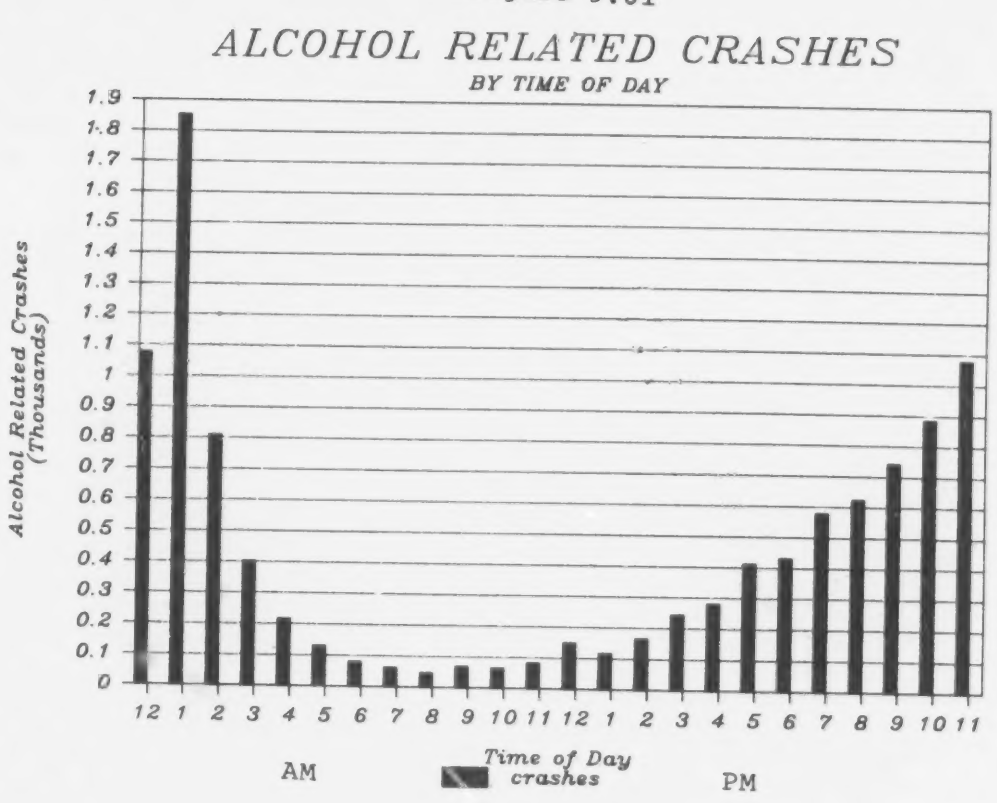

Figure 9.02

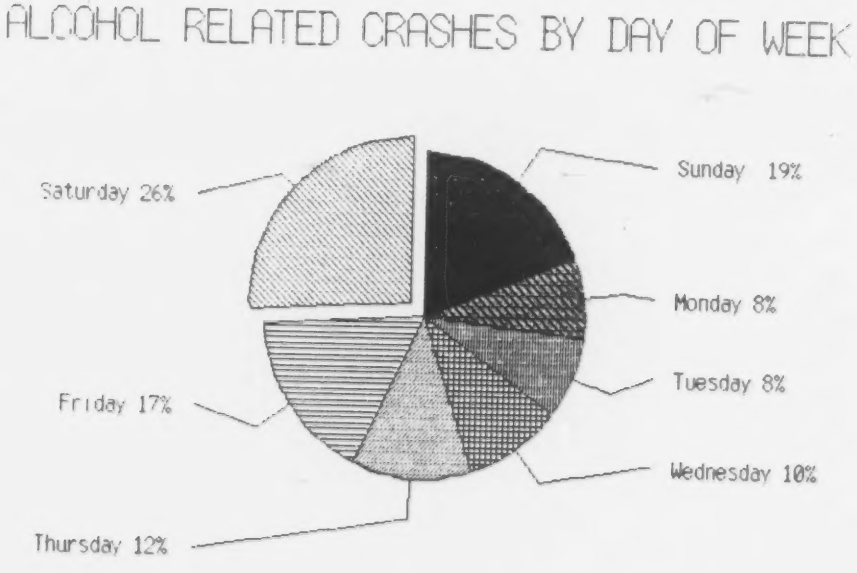

TABLE 9.03

AGE OF PERSONS KILLED AND INJURED IN 1984 CRASHES

IN WHICH A DRIVER HAD BEEN DRINKING*

AGE	PERSONS KILLED	PERSONS INJURED
0 - 4	6	81
5 - 9	2	84
10 - 14	3	128
15 - 19	53	1,937
20 - 24	49	2,278
25 - 29	24	1,213
30 - 34	22	678
35 - 39	15	428
40 - 44	6	285
45 - 49	11	185
50 - 54	8	135
55 - 59	3	130
60 - 64	7	95
65 - 69	0	66
70 - 74	6	40
75 & Older	1	45
Not Stated	2	325
Total	218	8,133

* Drivers in this category were listed on the traffic accident report as "under the influence" or "had been drinking".

(An additional 87 people were killed in accidents where a driver's or pedestrian's blood alcohol content was above .050, but whose accident report did not indicate alcohol involvement. This brings the total number of alcohol-related fatalities to 305).

TABLE 9.04

1984 ALCOHOL INVOLVEMENT BY FATALITY TYPE

Fatality Type	Total Killed	Total Tested	Total Positive	Total Intoxicated
Driver	311	263	146	121
Passenger	119	0	N/A	N/A
Motorcycle Driver	57	45	32	23
Motorcycle Passenger	5	0	N/A	N/A
Pedestrian	55	38	20	18
Bicyclist	15	5	1	1
Moped Driver	1	0	N/A	N/A
All-Terrain Vehicle Driver	4	2	1	1
Other Driver	10	8	6	4
Other Passenger	4	0	N/A	N/A
Other	1	0	N/A	N/A
Unknown	2	1	1	1
Total	584	362	207	169

TABLE 9.05

DRINKING DRIVER FATALITY SUMMARY 1975-1984

	Drivers Killed	Tested Drivers	Positive Drivers	Drunk Drivers
1975	431	230	142	113
1976	478	289	185	154
1977	476	276	166	149
1978	576	381	241	218
1979	523	329	190	168
1980	519	337	232	195
1981	437	288	178	150
1982	321	232	126	112
1983	345	258	145	117
1984	383	318	185	149

POSITIVE DRIVERS (OF THOSE TESTED)

	Male	Female	Occurred Between Midnight - 3 am	Under Legal Age*
1975	124	18	41	9
1976	173	12	56	8 (under 18)
1977	148	18	48	19
1978	222	19	78	32
1979	169	21	57	27
1980	211	21	68	23
1981	162	16	61	17
1982	116	10	41	9
1983	129	16	38	13
1984	163	22	63	17

DRUNK DRIVERS (OF THOSE TESTED)

	Male	Female	Occurred Between Midnight - 3 am	Under Legal Age
1975	98	15	40	6
1976	146	8	56	6 (under 18)
1977	135	14	48	13
1978	198	20	82	21
1979	149	19	68	19
1980	179	16	68	17
1981	138	12	81	15
1982	102	10	41	7
1983	105	12	38	8
1984	132	17	50	12

* The age of majority was legally lowered to 18 years of age on June 1, 1973, and the legal drinking age was raised to 19 years of age on September 1, 1976.

Figure 9.03

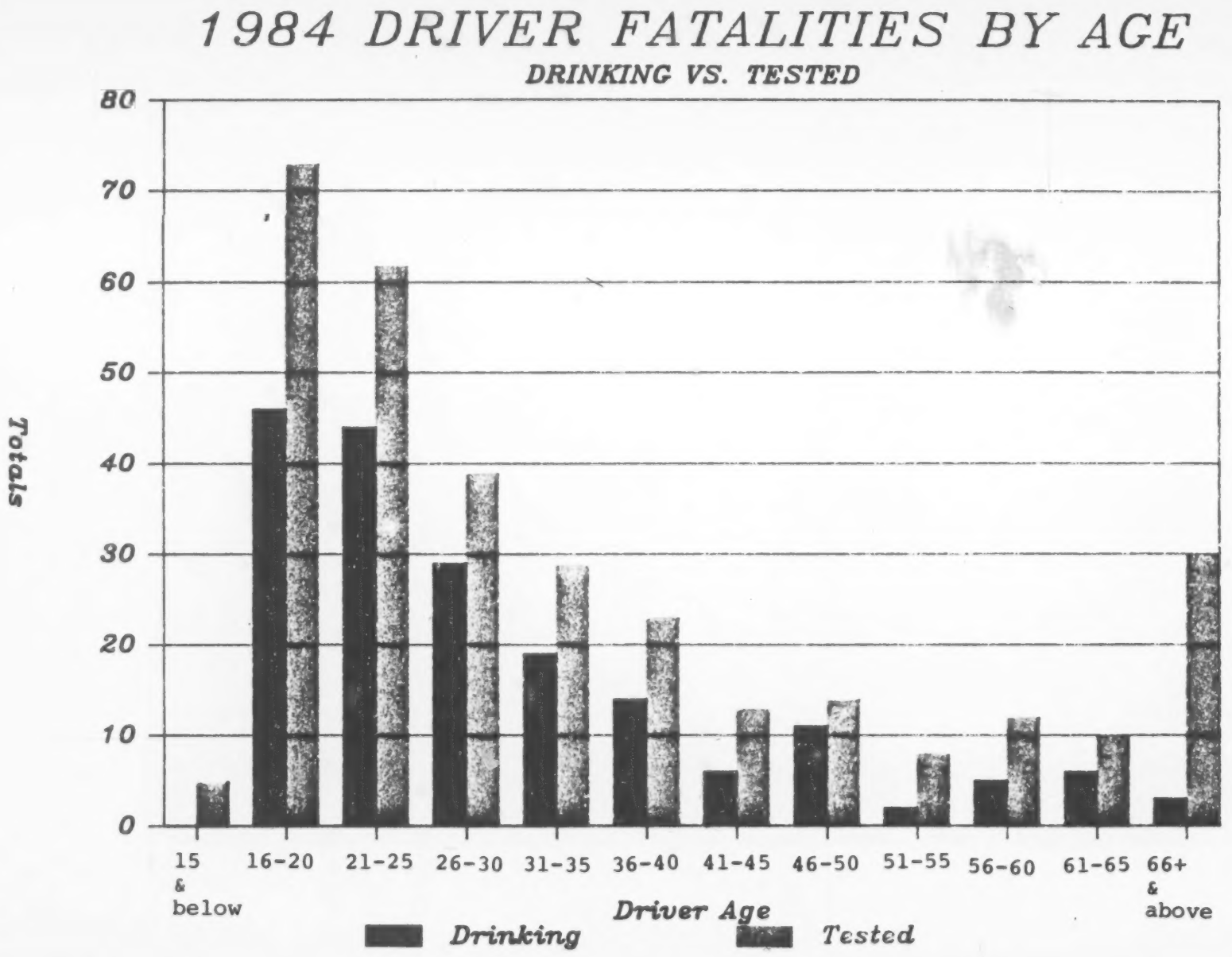
1984 DRIVER FATALITIES BY AGE
DRINKING VS. TESTED
Totals
80
70
60
50
40
30
20
10
0
15 & below
16-20
21-25
26-30
31-35
36-40
41-45
46-50
51-55
56-60
61-65
66+ & above
Driver Age
Drinking
Tested

TABLE 9.06

1984 DRIVER FATALITIES' LEVEL OF INTOXICATION BY AGE

Age	Total Killed	Total Tested	Total Positive	Total Intoxicated	Blood Alcohol Concentration .010-.049	.050-.099	.100-.149	.150-.249	.250 & Over	Percent Positive Of Total Tested In Age Group	Percent Intoxicated Of Total Tested In Age Group	Percent Of Total Positive By Age Group
15 And Below	7	5	0	0						0.0	0.0	0.0
16	13	10	3	2		1	2			30.0	20.0	1.6
17	12	9	7	6		1	3	3		77.8	66.7	3.8
18	14	10	7	4	1	2	1	3		70.0	40.0	3.8
19	23	23	13	9	1	3	3	4	2	56.5	39.1	7.0
20	23	21	16	13	1	2	2	10	1	76.2	61.9	8.6
21 - 25	73	62	44	35	2	7	9	19	7	71.0	56.5	23.8
26 - 30	44	39	29	26		3	5	16	5	74.4	66.7	15.7
31 - 35	36	29	19	17	2		3	10	4	65.5	58.6	10.3
36 - 40	25	23	14	13		1	6	3	4	60.9	56.5	7.6
41 - 45	17	13	6	4	2		2		2	46.2	30.8	3.2
46 - 50	17	14	11	8	2	1	1	5	2	78.6	57.1	5.9
51 - 55	10	8	2	0		2				25.0	0.0	1.1
56 - 60	12	12	5	4	1			1	3	41.7	33.3	2.7
61 - 65	14	10	6	6			1	3	2	60.0	60.0	3.2
66 And Above	43	30	3	2	1				2	10.0	6.7	1.6
Total	383	318	185	149	13	23	38	77	34	58.2	46.9	99.9

TABLE 9.07

1984 DRIVER FATALITIES' LEVEL OF INTOXICATION BY MONTH

Time	Total Killed	Total Tested	Total Positive	Blood Alcohol Concentration .010-.049	.050-.099	.100-.149	.150-.249	.250 & Over	Percent Of All Positive
January	18	16	7	3	1	0	2	1	3.8
February	17	13	4	0	0	1	1	2	2.2
March	23	19	6	0	2	1	2	1	3.2
April	25	21	16	0	3	3	5	5	8.6
May	37	31	18	0	2	2	12	2	9.7
June	41	33	20	2	2	2	11	3	10.8
July	41	35	22	1	1	6	9	5	11.9
August	48	36	23	1	4	3	8	7	12.4
September	21	18	14	1	2	3	7	1	7.6
October	35	29	13	2	0	2	6	3	7.0
November	43	39	23	1	5	9	6	2	12.4
December	34	28	19	2	1	6	8	2	10.3
Total	383	318	185	13	23	38	77	34	99.9

TABLE 9.08

1984 DRIVER FATALITIES' LEVEL OF INTOXICATION BY ROAD TYPE

Road Type	Total Killed	Total Tested	Total Positive	Blood Alcohol Concentration .010-.049	.050-.099	.100-.149	.150-.249	.250 & Over	Percent Of All Positive
Interstate	14	12	2				2		1.1
Trunk Highway	186	156	82	6	9	16	34	17	44.3
County Road of Highway	135	114	76	5	9	16	30	16	41.1
City Street	27	20	13	1	1	3	8	0	7.0
Township Road	20	15	11	1	4	3	2	1	5.9
Other Road	1	1	1				1		0.5
Total	383	318	185	13	23	38	77	34	99.9

TABLE 9.09

1984 DRIVER FATALITIES' LEVEL OF INTOXICATION BY TIME OF DAY

Time	Total Killed	Total Tested	Total Positive	Blood Alcohol Concentration .010-.049	.050-.099	.100-.149	.150-.249	.250 & Over	Percent Of All Positive
Midnight-2:59 AM	77	70	63	4	9	12	23	15	34.1
3:00 AM-5:59 AM	21	19	16	1	0	2	12	1	8.6
6:00 AM-8:59 AM	32	23	5	0	1	0	2	2	2.7
9:00 AM-11:59 AM	30	25	3	1	2	0	0	0	1.6
Noon-2:59 PM	37	28	4	2	0	0	0	2	2.2
3:00 PM-5:59 PM	57	40	14	3	2	1	7	1	7.6
6:00 PM-8:59 PM	52	41	26	0	2	9	12	3	14.1
9:00 PM-11:59 PM	65	57	45	2	6	10	19	8	24.3
Unknown	12	10	9	0	1	4	2	2	4.9
Total	383	318	185	13	23	38	77	34	100.1

TABLE 9.10

DRINKING PEDESTRIAN FATALITY SUMMARY 1975-1984

	Killed	Tested	Positive	Drunk
1975	121	45	26	22
1976	120	58	25	22
1977	140	62	32	32
1978	115	54	33	22
1979	117	56	29	26
1980	114	48	28	26
1981	100	53	26	23
1982	76	40	18	17
1983	62	38	21	18
1984	55	38	20	18

Figure 9.04

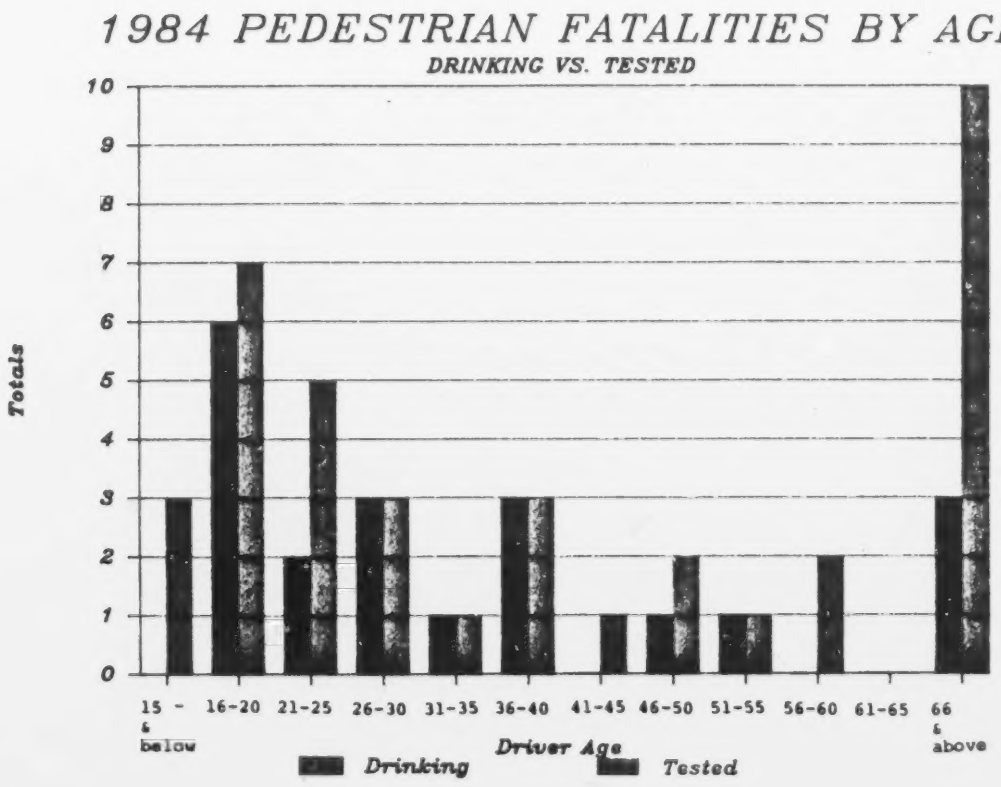

TABLE 9.11

1984 PEDESTRIAN FATALITIES' LEVEL OF INTOXICATION BY AGE

Age	Total Killed	Total Tested	Total Positive	Total Intoxicated	Blood Alcohol Concentration .010-.049	.050-.099	.100-.149	.150-.249	.250 & Over	Percent Of Total Positive By Age Group
15 & Below	9	3	0	0						0.0
16	1	1	1	1				1		5.0
17	0	0	0	0						0.0
18	2	2	2	2			1		1	10.0
19	4	4	3	3			1	2		15.0
20	0	0	0	0						0.0
21 - 25	5	5	2	1		1		1		10.0
26 - 30	4	3	3	3			1	1	1	15.0
31 - 35	1	1	1	1					1	5.0
36 - 40	3	3	3	3				2	1	15.0
41 - 45	1	1	0	0						0.0
46 - 50	2	2	1	1					1	5.0
51 - 55	2	1	1	1					1	5.0
56 - 60	2	2	0	0						0.0
61 - 65	2	0	0	0						0.0
66 & Above	17	10	3	2		1	1		1	15.0
Total	55	38	20	18	0	2	4	7	7	100.0

TABLE 9.12

1984 PEDESTRIAN FATALITIES' LEVEL OF INTOXICATION BY TIME OF DAY

Time	Total Killed	Total Tested	Total Positive	Blood Alcohol Concentration .010-.049	.050-.099	.100-.149	.150-.249	.250 & Over	Percent Of All Positive
Midnight-2:59 AM	8	8	8		1		4	3	40.0
3:00 AM-5:59 AM	3	2	2			1	1		10.0
6:00 AM-8:59 AM	3	3	0						0.0
9:00 AM-11:59 AM	4	1	0						0.0
Noon-2:59 PM	6	4	0						0.0
3:00 PM-5:59 PM	12	5	0						0.0
6:00 PM-8:59 PM	13	10	5		1	1	1	2	25.0
9:00 PM-11:59 PM	6	5	5			2	1	2	25.0
Total	55	38	20	0	2	4	7	7	100.0

PART X

SEAT BELT INFORMATION

The effect of safety restraints in reducing injuries and deaths caused by motor vehicle accidents is dramatic. A conservative estimate by the National Highway Traffic Safety Administration is that the use of safety restraints can reduce overall motor vehicle fatalities by 50 percent and disabling injuries by 60 percent.

The latest federal observation study of safety belt use indicated that, nationwide, only 15 percent of the motoring public use their safety belts. Observation studies conducted by the state of Minnesota indicate that, statewide, 15 percent of the people also use their safety equipment. Accident data for 1984 indicates that nearly 92 percent of the people killed and 84 percent of those injured were not wearing seat belts at the time of their crashes. Ninety-six percent of the killed and injured who did not wear seat belts were in vehicles that were equipped with them. Clearly, a very low percentage of motorists presently makes use of the known protection provided by safety belts and child seats.

The Minnesota Child Passenger Protection Act, which was put into effect on January 1, 1982, required parents and guardians to have a federally approved child restraint properly installed in their vehicle when transporting children younger than four years old. Effective August 1, 1985, this law was amended to require that these children be properly secured in the seats. Statewide observations in 1984 indicate that 70 percent of the infants and 29 percent of the children at least one year old but younger than four were protected by child safety seats when riding in automobiles. Of the 12 children and infants less than four years old who died as a result of a motor vehicle accident in 1984, none were in child safety seats. Of those injured in this age group, 85 percent were not riding in the required restraints.

Please note that this section is based only on those people traveling in vehicles for which seat belts are mandatory equipment.

TABLE 10.01

1984 KNOWN SEAT BELT USAGE OF KILLED AND INJURED PERSONS

	Fatalities		Severe Injuries		Moderate Injuries		Possible Injuries	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Restraining Device Installed And Used	25	8.2	272	11.0	1,051	14.1	1,484	20.2
Restraining Device Installed But Not Used	263	86.8	2,085	84.7	6,151	82.7	5,651	76.8
Restraining Device Not Installed	15	4.9	105	4.3	237	3.2	226	3.1
Total	303	99.9	2,462	100.0	7,439	100.0	7,361	100.1

TABLE 10.02

1984 INJURY SEVERITY OF CHILDREN UNDER AGE 4

	Child Restraint Used		
Severity of Injury	Number	Percent of Total	Total Children Under 4
"K"--Fatal Injury	0	0	12
"A"--Severe Injury	4	6.5	61
"B"--Moderate Injury	57	15.4	371
"C"--Possible Injury	71	16.2	437
Total	132	38.1	881

TABLE 10.03

SEAT BELT AND CHILD RESTRAINT USE IN MINNESOTA*

People Observed	1981 Restrained Number	1981 Restrained Percent	1982 Restrained Number	1982 Restrained Percent	1983 Restrained Number	1983 Restrained Percent	1984 Restrained Number	1984 Restrained Percent
Infants; less than one year old	54	51.9	93	65.0	93	54.4	112	70.8
Young Children; at least one and less than four	61	17.4	113	22.4	180	30.6	123	29.3
Older Children; at least four and less than 10	18	3.7	61	7.8	138	13.2	170	16.7
Passengers; 10 or older	101	9.9	162	6.2	281	11.0	407	11.5
Drivers	272	13.2	478	10.1	714	14.0	991	15.1

* Data provided by the Minnesota Department of Public Safety's observational studies.

Figure 10.01 and Table 10.04 also display information on safety restraint usage. Further explanations of these tables may be useful. Seat belt usage is unknown for large numbers of people hurt in accidents, which complicates interpreting the data. For instance, at seven o'clock in the morning 1,476 people were killed or injured in motor vehicles. We know that 150 of these people were safely restrained and 515 were not restrained, so we are certain of the seat belt usage of only 665 people. Lack of complete reporting on seat belt use in accidents makes it difficult to know what percentage of people used their seat belts at 7:00 a.m.; is it 10 percent (150 out of 1,476) or 22 percent (150 out of 665)? This figure and the following table show both percentages and are therefore best used for comparisions. For example, seat belts are worn most often between 7:00 a.m. and 1:00 p.m. and young people between the ages of 10 and 24 are least likely to wear seat belts.

Figure 10.01

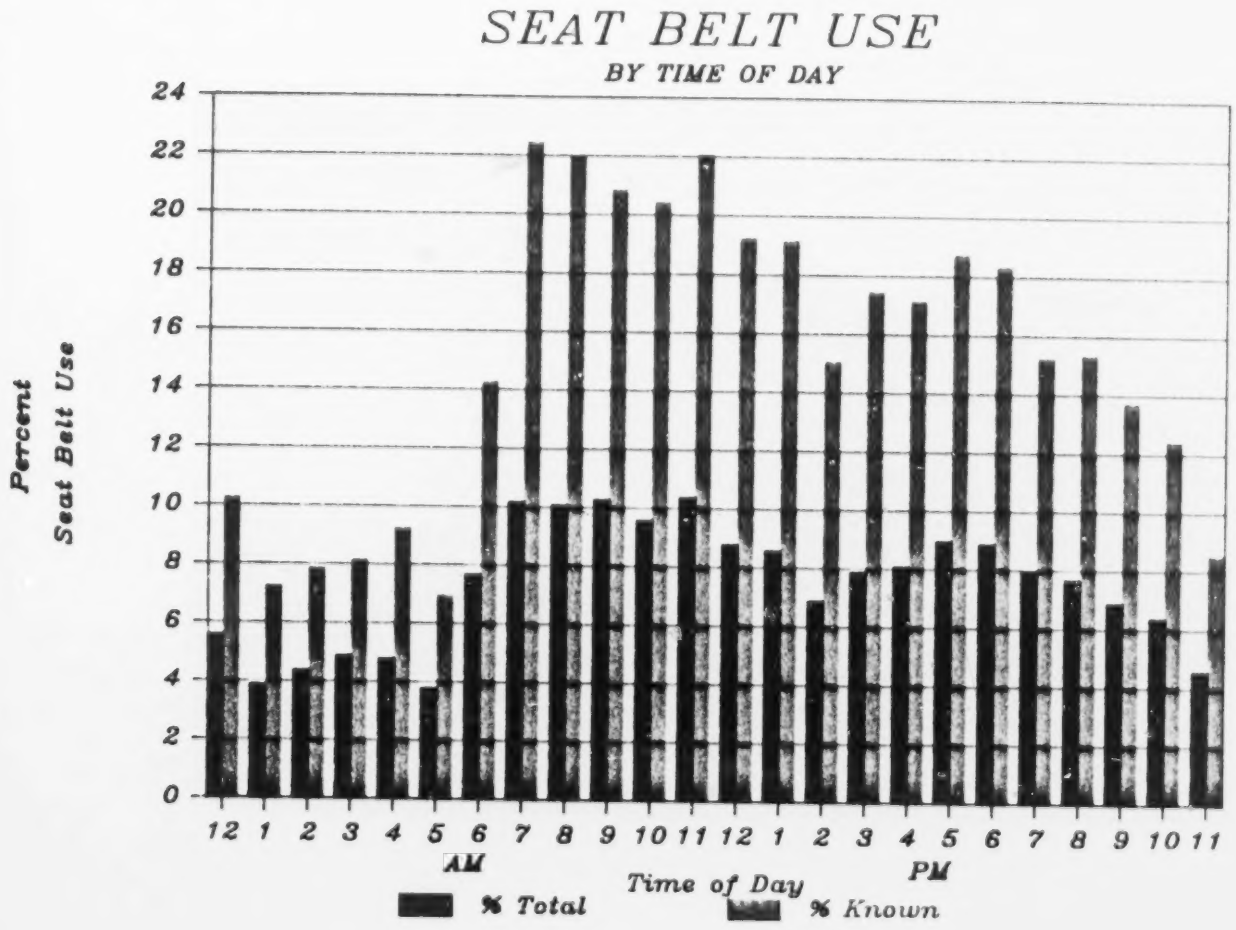

TABLE 10.04

RESTRAINT USE OF KILLED AND INJURED PERSONS IN 1984

Age Group	Restrained			Unrestrained		
	Number	Percent of Known*	Percent of Total**	Number	Percent of Known*	Percent of Total**
0 - 4	263	43.8	29.8	337	56.2	38.2
5 - 9	91	17.7	10.1	423	82.3	47.1
10-14	56	9.2	5.5	552	91.8	54.0
15-19	274	7.7	4.0	3,277	92.3	47.9
20-24	353	11.5	5.5	2,722	88.5	42.7
25-29	368	17.6	8.3	1,722	82.4	38.9
30-34	295	20.9	9.6	1,114	79.1	36.3
35-39	257	22.5	10.5	887	77.5	36.1
40-44	144	18.5	8.3	634	81.5	36.5
45-49	111	19.3	8.6	465	80.7	36.2
50-54	110	22.2	9.6	386	77.8	33.8
55-59	107	20.5	9.2	415	79.5	35.8
60-64	117	25.3	11.9	345	74.7	35.2
65-69	75	18.6	9.3	328	81.4	40.6
70-74	63	18.9	8.7	270	81.1	37.5
75 & Over	71	13.9	8.0	439	86.1	45.4
Unknown	77	15.6	5.0	417	84.4	27.3
Total	2,832	323.7	161.9	14,733	1,377.3	669.5

* Based on only those within the age group whose restraint use is known.

** Based on the total injured and killed in the age group.

TABLE 10.05

EJECTION* OF OCCUPANTS OF MOTOR VEHICLES

	Fatalities		Persons Injured	
	Number	Percent	Number	Percent
Not Ejected from Vehicle	189	43.9	28,663	79.9
Partially Ejected	35	8.1	226	0.6
Totally Ejected	107	24.9	732	2.0
Trapped/Extricated	88	20.5	1,161	3.2
Unknown/Inapplicable	11	2.6	5,071	14.1
Total	430	100.0	35,853	99.8

* It is estimated by the National Safety Council that 80% of the people killed when they were thrown from a car would have survived if they had been wearing seat belts.

S4230-2

CORRECTIONS TO CRASH FACTS - 1984

Page

vii Fifth paragraph from bottom should read: "The fatality rate per hundred million vehicle miles traveled..."

1 Last two columns of Table 1.01 should read:

	1983	1984
Registered Motor Vehicles (millions of vehicles)	3.03	3.13
Fatality Rate per 100,000 Registered Vehicles	18.4	18.7
Crash Rate per 100,000 Registered Vehicles	3,214	3,244

(Note: Graph on page 2 should reflect change in number of motor vehicles for 1983 and 1984)

6 Christmas, 1984, last column, last row should read: 121. (Property damage crashes)

36 Last two columns should read:

Total	
Fatalities	Injuries
3	54
5	104
0	21
0	8
3	8
0	7
1	20
2	65
0	45
2	42
0	48
2	58
2	60
3	88
1	79
3	171
4	146
5	143
4	98
6	107
3	84
2	86
3	46
1	54
0	40
55	1682

90 Third paragraph, fourth line should read: "Effective August 1, 1983..."